

BGES, INC.

ENVIRONMENTAL CONSULTANTS

**ICICLE SEAFOODS, INC.
EGEGIK, ALASKA**

**WAFCO MONITORING REPORT
FOR 2013 FIELD SEASON**

FEBRUARY 2015



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ACRONYMS

AAC	-	Alaska Administrative Code
ADEC	-	Alaska Department of Environmental Conservation
AK	-	Alaska
AST	-	Aboveground Storage Tank
bg	-	Below Grade
BGES	-	Braunstein Geological and Environmental Services
BTEX	-	Benzene, Toluene, Ethylbenzene, and Total Xylenes
C	-	Celsius
CCV	-	Continuing Calibration Verification
CSM	-	Conceptual Site Model
cy	-	cubic yard
DRO	-	Diesel Range Organics
DU	-	Decision Unit
EPA	-	Environmental Protection Agency
ERBSC	-	Ecological Risk-Based Screening Criteria
ESA	-	Environmental Site Assessment
FE	-	Fundamental Error
GRO	-	Gasoline Range Organics
Icicle	-	Icicle Seafoods, Inc.
LCSD	-	Laboratory Control Sample Duplicate
LOQ	-	Limit of Quantitation
mg/Kg	-	Milligrams per Kilogram
mg/L	-	Milligrams per Liter
MI	-	Multi-Incremental
ml/mn	-	milliliters per minute
MRLs	-	Method Reporting Limits
PAHs	-	Polynuclear Aromatic Hydrocarbons
PID	-	Photoionization Detector
ppm	-	Parts Per Million
QC	-	Quality Control
QP	-	Qualified Person
RAIS	-	Risk Assessment Information System
RPD	-	Relative Percent Difference
RSD	-	Relative Standard Deviation
RRO	-	Residual Range Organics
SCV	-	Secondary Chronic Value
SGS	-	SGS North America, Inc.
TAH	-	Total Aromatic Hydrocarbons
TAqH	-	Total Aqueous Hydrocarbons
UCL	-	Upper Confidence Level
VOCs	-	Volatile Organic Compounds
WAFCO	-	Woodbine Alaska Fish Company

1.0 INTRODUCTION

BGES, Inc. (BGES) was retained by Icicle Seafoods, Inc. (Icicle) to perform monitoring activities at their processing plant located at 1 Cannery Road in Egegik, Alaska; hereafter referred to as the subject property (Figure 1). The subject property is located in the northeastern portion of Egegik, Alaska; adjacent to, and south of the Egegik River. The subject property contains an operational fish processing facility, which covers approximately 84 acres.

The site monitoring activities described in this report rely on information provided to BGES by Icicle and Woodbine Alaska Fish Company (WAFCO); the Phase I and II Environmental Site Assessments (ESAs) that were undertaken by BGES during the 2005 field season; and the additional assessment and remediation activities that were undertaken by BGES during the 2006, 2007, 2008, 2009, and 2010 field seasons. The Alaska Department of Environmental Conservation (ADEC) File Identification Number for the Icicle Seafoods Facility is 2543.38.002 (Reckey Identification 1993250119001), and has now been combined with the Egegik Icicle Seafood spills (Reckey Identification 2005250115401), which had been the subject of separate reporting. BGES, in consultation with the ADEC, determined that the site required continued monitoring activities, as discussed below.

Site History. In 1895, an Alaska Packers Association salmon saltery was established at the mouth of Egegik River, presumably at the location of the current Icicle facility, and a town developed around the fish camp. Egegik, which currently has a strong year-round Alutiiq culture, was incorporated as a second-class city in 1995. The Icicle facility obtains its drinking water from the City water supply system, and its processing water from School Lake.

Prior owners/operators of the subject property included the Alaska Packers Association, Diamond E. Fisheries, and just prior to Icicle's ownership, WAFCO, who owned the cannery at the subject property from 1989 through 2005, when Icicle purchased the subject property. Based on a review of historical aerial photographs of the subject property, the facility has been operational with much the same configuration as today since at least 1963.

Legal Description. The legal description of the subject property includes the following parcels:

Parcel 1 – United States Survey No. 485, records of the Kvichak Recording District, third Judicial District, State of Alaska, excepting therefrom that portion deeded to Homer L. Leonard, Jr. by Judgment recorded August 28, 1992 in Book 24 at Page 586.

Parcel 2 – United States Survey No. 551, records of the Kvichak Recording District, third Judicial District, State of Alaska, excepting therefrom that portion of said premises, the private residence and underlying land identified as E. Deigh's residence, as reserved in Deed recorded April 22, 1975 in Book 10 at Page 467; excepting therefrom that portion of said premises as conveyed by deed recorded on July 21, 1975 in Book 10 at Page 499, being more particularly described as follows: Commencing at W.C.M.C. 1, U.S. Survey 551, identical with W.C.M.C. 4, U.S. Survey 2366; thence S 13° 56'00" W 233.96 feet along a line common to U.S. Surveys 551 and 2366; thence S 73° 45'20" E 17.42 feet to the True Point of Beginning; (1) Thence S 73°45'20" E 122.00 feet; (2) thence S 16°14'40" W 80.00 feet; (3) thence N 73°45'20" W 122.00 feet; (4) thence N 16°14'40" E 80.00 feet to the Point of Beginning; and excepting therefrom that portion deeded to Homer L. Leonard, Jr. by Judgment recorded August 28, 1992 in Book 24 at Page 586.

Parcel 3 – United States Survey No. 2366, records of the Kvichak Recording District, third Judicial District, State of Alaska, excepting therefrom that portion of said premises, the private residence and underlying land identified as Winterman's residence, as reserved in Deed recorded April 22, 1975 in Book 10 at Page 467.

Parcel 4 - United States Survey No. 2367, records of the Kvichak Recording District, third Judicial District, State of Alaska, excepting therefrom that portion deeded to Morgan Chmiel by Deed recorded February 2, 1993 in Book 25 at Page 7.

Parcel 5 – Lot One (1) of United States Survey No. 4941, records of the Kvichak Recording District, Third Judicial District, State of Alaska; excepting therefrom Lot One "A" of Fuel Farm Subdivision, according to Plat 99-5.

Parcel 6 – Alaska Tidelands Survey No. 67, records of the Kvichak Recording District, Third Judicial District, State of Alaska.

The property is located in the Northeast Quarter of Section 1, Township 23 South, Range 50 West, Naknek A-5 Quadrangle, Seward Meridian, Alaska. Egegik lies at approximately 58.215560°

North Latitude and -157.37583° West Longitude. Egegik is in the Kvichak Recording District.

This WAFCO Monitoring Report for the 2013 Field Season presents the activities completed in accordance with the WAFCO Long-Term Monitoring Work Plan (Revision 1) for 2011 through 2014 (dated May 2011); which was approved by Todd Blessing of the ADEC on July 8, 2011. Monitoring activities were accomplished by BGES between August 9, and August 12, 2013. The 2013 activities performed by BGES consisted of collecting water samples for laboratory analysis from several specific monitoring wells, piezometers, and the interception trench; observing the interception and recirculation trenches operation; observing the seeps in the inter-tidal area of the beach of the Egegik River; and collecting multi-incremental (MI) soil samples from specific land-farm areas. In addition, between 2011 and 2013, Icicle personnel continued to perform the land-farm maintenance activities and to operate the interception and recirculation trenches. Details of the soil and groundwater monitoring activities performed by BGES are presented below in Sections 3.2 and 3.3, respectively, in this report.

2.0 BACKGROUND

The property has operated as a fish processing facility since the 1890s; therefore, the potential for numerous spills to have occurred on the property prior to the earliest documented release (1993) is significant. More recently, the plant was owned by Diamond E. Fisheries, before being sold to WAFCO at a bankruptcy sale in late 1989. A diesel day tank was overfilled by WAFCO in the “beach” area of the site on, or about July 2, 1993, resulting in several hundred to 2,000 gallons of fuel that reportedly flowed to the adjacent beach. It was reported that WAFCO conducted some excavation activities to clean up the spill. On July 9, 1993, the ADEC sent staff to the site to investigate this release, and in turn, found evidence of additional spills. Contamination was observed at the tank farm and in the vicinity of a gasoline pipeline release in the central beach area. The property was sold to Icicle in February of 2005, and funds were reserved for additional assessment and cleanup work to be performed at the site.

2005 Assessment and Remediation Activities. Various assessment and remediation activities have been conducted at the site since the property transfer to Icicle in 2005. During the summer of 2005, BGES conducted significant assessment activities that were used to evaluate the necessary and appropriate remedial options for this site. Additional fuel releases were documented in the beach

area of the July 1993 release, including one that occurred during BGES' initial site reconnaissance on June 30, 2005 at the Freezer Plant, after Icicle purchased the subject property. Several groundwater monitoring wells and inter-tidal piezometers were installed at the site to document the groundwater contaminant trends.

2006 Assessment and Remediation Activities. Numerous remediation and assessment activities were accomplished during the 2006 field season, including a remediation pilot test utilizing mycoremediation (mushrooms). A land-farm was created whereby previously stockpiled soils, as well as newly excavated contaminated soils, were partially spread to biodegrade the petroleum compounds in the soils. Impacted soils generated by Icicle, which include soils from the Freezer Plant overfill accident and a spill at the Generator Building, remain separate from impacted soils generated by WAFCO. Impacted soils were excavated and transported to the WAFCO land-farm from the Mechanics' Housing area, the Ugashik/Meshik area, the Patricia Ann area, and a portion of the beach area. Additional piezometers in the inter-tidal area of the beach area were also installed.

2007 Assessment and Remediation Activities. Additional remediation and monitoring activities were accomplished during the 2007 field season, including the construction of a groundwater interception trench and recirculation trench upgradient of the inter-tidal area of the beach, and excavation of impacted soils from various areas of the property (with soils being moved to the land-farm), as well as additional groundwater monitoring. The interception trench was constructed to intercept the major hydrocarbon contamination that had been identified in the piezometers and monitoring wells and that had also been evident in the form of sheen reaching the Egegik River. The 100-foot long trench was constructed just above the inter-tidal portion of the central beach area of the property, downgradient from the major seep areas to a depth of several feet below groundwater, and downgradient of the current and former tank farms. Since its installation, only a minor amount of sheen has been observed in the inter-tidal region of the Egegik River. Additional contaminated soils were excavated during 2007 from the area of the Mechanics' Housing that was not accessible during 2006. It is estimated that approximately 150 cubic yards (cy) of impacted soils remain in the Mechanics' Housing area after the 2007 excavation activities. Additional soil samples were also collected from the bottom of the former excavations of the Patricia Ann Boat Storage area (western property boundary) and the Ugashik/Meshik area, which were both excavated during the 2005 and 2006 field seasons. All of the impacted soils that resided at the land-farm, and

the new soils stockpiled at the land-farm from the Mechanics' Building excavation, were completely spread, and baseline MI soil samples were collected. During 2007, groundwater samples were collected from several monitoring wells and piezometers.

2008 Assessment and Remediation Activities. On-going assessment and remediation activities were performed in 2008 and included installation of Monitoring Well MW-17 in the vicinity of the former Mechanics' Housing area; collecting water samples from Monitoring Wells MW-8, MW-16, Piezometers PZ-2, PZ-3, PZ-4, PZ-5, and PZ-6, and School Lake to monitor groundwater and surface water quality trends; inspecting the interception and recirculation trenches; and observing the seeps in the inter-tidal area of the beach. There were two gasoline tanks formerly located to the northwest of the diesel tanks in the tank farm area that had a secondary containment with a heavily damaged bladder overlying native soils. The gasoline tanks were decommissioned in 2006 and were removed prior to the 2008 field event. The soils beneath the secondary containment were graded into stockpiles. The stockpiled soils as well as the graded soils were assessed, and no indications of petroleum releases were observed. A second round of sampling at the WAFCO land-farm also occurred during the 2008 field season to evaluate the MI sampling method that was conducted during 2007.

2009 Assessment and Remediation Activities. During the 2009 field season, all of the monitoring wells and piezometers were sampled with the exceptions of Monitoring Wells MW-15 and MW-17, which were found to be "dry"; and Piezometer PZ-2, which could not be sampled because of logistical issues. During sampling activities, a water sample was also collected from School Lake to evaluate surface water quality trends. Additionally, the interception and recirculation trenches were inspected and a water sample was collected from the interception trench to evaluate the presence of iron.

Results indicated that, for the inter-tidal area of the beach, water samples collected from Piezometer PZ-3 continued to exhibit petroleum hydrocarbon impacts at concentrations exceeding ADEC cleanup criteria as well as the ecological risk-based screening criteria (ERBSC) for freshwater and the water quality standards for freshwater use. Excavation activities completed during the 2009 field season included the removal of approximately 40 cy of contaminated soils from the area adjacent to Monitoring Well MW-17; the soils were placed in the LF-MBEX portion of the WAFCO land-farm areas.

After completion of the 2009 excavation activities, an estimated total of 8,461 cy of soils had been excavated, stockpiled, and spread at the WAFCO land-farm area, which is located southwest of the cannery.

2010 Assessment Activities. During the 2010 assessment activities, water samples were collected from Monitoring Wells MW-12 and MW-17, Piezometer PZ-3, and the interception trench. A water sample was not collected from MW-15 because it was “dry”. BGES recommended in the report that MW-15 be decommissioned.

The water samples collected from Monitoring Wells MW-12 and MW-17 exhibited non-detectable concentrations of contaminants below the laboratory’s method reporting limits (MRLs) and below ADEC cleanup criteria.

The water sample collected from PZ-3 exhibited concentrations of benzene, ethylbenzene, total xylenes, and 1,2,4-trimethylbenzene in excess of the ADEC cleanup criteria. The concentrations of benzene, ethylbenzene, and total xylenes also exceeded the ERBSCs for freshwater. The concentrations of naphthalene and toluene exhibited by Water Sample PZ-3 exceeded the ERBSCs; however, these analytes did not exceed their respective ADEC cleanup criteria. The values for total aromatic hydrocarbons (TAH) and total aqueous hydrocarbons (TAqH) were calculated based on the volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs) results; both the TAH [19.06 milligrams per liter (mg/L)] and TAqH (19.07 mg/L) calculated values exceeded the ADEC water quality standards for freshwater. In general, the PZ-3 concentrations increased slightly from 2009 to 2010. In addition, the calculated TAH and TAqH values increased from 2009 to 2010.

The water sample was collected from the interception trench to evaluate whether or not there had been an increase in bacterial growth in the remediation system. The water sample exhibited a total iron concentration of 21.7 mg/L, which was an increase from the result of 1.43 mg/L obtained in 2009.

Details of our previous assessments and remedial activities are documented in the following reports.

- October 2005, Phase I ESA
- November 2005, Phase II ESA Report

- February 2006, Additional Characterization and Remediation Report
- February 2007, Additional Characterization and Remediation Report
- March 2008, Site Remediation and Monitoring Report
- March 2009, Site Remediation and Monitoring Report
- April 2010, 2009 Site Assessment and Remediation Activities Report
- April 2010, Site Remediation and Monitoring Report for 2009 Field Season
- March 2011, WAFCO Monitoring Report for 2010 Field Season

Icicle personnel maintain the warning signs and the berm around the perimeter of the land-farm areas. The land-farming remediation activities continued through 2013 by tilling the land-farm area and adding water and fertilizer, as necessary. The land-farming remediation activities are performed by Icicle personnel. Documentation of the performance of these activities has been submitted to the ADEC by Icicle personnel, under a separate report.

The ongoing monitoring of groundwater quality and the degradation of petroleum in the contaminated soils in the land-farm areas was performed in August of 2013 and these activities are the subject of this report.

3.0 AUGUST OF 2013 MONITORING ACTIVITIES

All field work was performed by Qualified Persons (QPs) as defined by the ADEC. All field work was completed in general accordance with the ADEC's Field Sampling Guidance (May 2010) and the ADEC's Guidance on Multi Increment Soil Sampling (March 2009). Photographs 1 through 13 for the field sampling activities and the project site are presented in Appendix A.

With the above information concerning previous site assessments and remediation activities in mind, and in coordination with the ADEC, BGES conducted ongoing monitoring activities at the site. The work performed during the 2013 field season included the following activities:

- Collection and analysis of groundwater samples from two monitoring wells and two piezometers;
- Inspection of the interception and recirculation trenches and collection of a water sample from the interception trench;
- Evaluation of the inter-tidal area of the Egegik River, which is located downgradient of the interception trench and recirculation trenches, for a hydrocarbon sheen and a potential

seep(s), if any; and,

- Collection and analysis of MI soil samples from specific land-farm areas to evaluate the progress of degradation of petroleum contaminants.

3.1 Modifications to the Work Plan

The WAFCO Long-Term Monitoring Work Plan (Revision 1) for 2011 through 2014 was approved by Todd Blessing of the ADEC on July 8, 2011, via email correspondence. The following minor modifications to the work plan occurred for the reasons described below:

- BGES requested that the sieving and sub-sampling for the non-volatile portion of MI soil samples be handled in a controlled laboratory environment; specifically, at SGS North America, Inc. (SGS), an ADEC-approved laboratory. Mr. Bill O'Connell, ADEC Project Manager, approved of this work plan modification via email on July 17, 2013.
- A groundwater water sample was not collected from Monitoring Well MW-7 because this well could not be located.
- A groundwater water sample was not collected from Monitoring Well MW-17 because an unknown blockage prevented the equipment from being lowered into the well to the appropriate depth to collect a groundwater sample.
- A groundwater sample was collected from Piezometer PZ-3 using a micro-bailer, because the 0.85-inch bladder pump would not fit into the well. Piezometer PZ-3 appeared to have been damaged by frost heaving.

3.2 Multi-Incremental Soil Sample Collection and Land-Farm Maintenance

As mentioned above, approximately 8,461 cy of soil have been excavated, stockpiled, and spread at the WAFCO land-farm area. The WAFCO land-farm area has been separated into 12 smaller areas [decision units (DUs)] based on the degree and type of soil contamination.

Analytical results from the 2007 and 2008 MI sampling activities indicated that the DUs should be approximately ¼-acre or smaller in order to obtain a normal data distribution set with acceptable precision. The approximate size of each DU sampled during 2013 is included on Figure 2. All of the DUs sampled during the 2013 field season were less than, or approximately equal to 0.25-acre in size, except for LF-E1 (0.26 acre) and LF-D2 (0.37 acre). The same DU designations utilized during the 2007 and 2008 sampling events were again used during the 2013 sampling activities. Because the historic analytical results were below the ADEC cleanup criteria for DUs LF-A1, LF-

A2, LF-C1, and LF-C2, MI samples were not collected from these DUs as indicated in the Revised 2011 Work Plan (Figure 2).

A MI sample is a representative sample for a given DU. To monitor the degradation of contaminants and to determine if ADEC cleanup levels have been achieved, MI samples were collected from each of the remaining eight DUs (LF-B1, LF-B2, LF-D1, LF-D2, LF-E1, LF-E2, LF-MBEX, and LF-GAS) during the 2013 field season. Eight MI samples plus a duplicate and triplicate sample set were collected from these DUs during the 2013 field season (Figure 2).

Systematic random MI sampling was conducted to characterize the contaminated soils present in each of the DUs. The first sampling location and sampling depth in each DU were randomly determined, so that each "cell" within each DU grid had an equal probability of being sampled. The MI samples were collected in general accordance with the ADEC Guidance on Multi Increment Soil Sampling (March, 2009).

The MI sample from each DU consisted of at least 37 aliquots of soil collected from depths that spanned from the top of the DU to approximately 12 inches in depth (approximate thickness of each DU). Each sample aliquot was collected from a 3-inch random depth interval within each DU, starting with the random interval below the top of the land-farm surface chosen for each DU. The random sampling order and depth interval for each DU was chosen utilizing a coin flip.

A grid created for each DU was marked with pin flags, to produce at least 110 equal, but separate cells (Photographs 1 through 4 in Appendix A). The first sampling location within each DU was randomly determined. Then a sample aliquot was collected from every third cell throughout each DU. Each aliquot was collected from a 3-inch depth interval. The depths from which the aliquots were collected were also randomly determined. For example, for DU LF-E1, the first aliquot was collected from the third cell and from a sample depth of 3 to 6 inches below the top of the land-farm surface. The second aliquot was collected from the sixth cell and from a sample depth of 6 to 9 inches below the top of the land-farm surface. The collection of samples from this order of sampling depths was completed throughout the entire DU. Then, the sample locations and depths were determined randomly for each separate DU. The sample aliquots from each DU were collected using a stainless steel probe as described below. At least 37 aliquots of soil were collected from different cells and depths throughout each DU.

As a quality control measure, one triplicate sample set (three samples) was collected from DU LF-MBEX, and was submitted to the analytical laboratory “blindly” in order to evaluate the precision of the MI sampling process. The triplicate sample set was collected to verify that the MI samples truly represent the DU by allowing for the calculation of relative standard deviation (RSD).

Soil sample aliquots were collected from each DU from a pre-measured grid, as shown below in an example grid.

P	D	T	P	D	T	P	D	T	P	D
T	P	D	T	P	D	T	P	D	T	P
D	T	P	D	T	P	D	T	P	D	T

The letter “P” represents the cells from which the primary sample was collected. As for the triplicate samples that were collected from the DU LF-MBEX, the duplicate was collected from the cells marked “D”, and the third sample was collected from the cells labeled “T”. The grid shown above has been abbreviated for presentation in this report. Thus, as mentioned above, the MI samples collected during the 2013 field season were submitted to the laboratory to characterize specific DUs within the land-farm area.

MI Soil Samples LF-GAS and LF-MBEX (and its associated duplicate and triplicate; LF-MBEY and LF-MBEZ, respectively) were analyzed for gasoline range organics (GRO); benzene, toluene, ethylbenzene, and total xylenes (BTEX); diesel range organics (DRO); and residual range organics (RRO). The samples submitted for analysis of volatile constituents (GRO and BTEX) were collected prior to the non-volatile samples (DRO/RRO), as discussed below. The remaining MI Soil Samples LF-B1, LF-B2, LF-D1, LF-D2, LF-E1, and LF-E2 were analyzed for only DRO and RRO.

Volatile Sample Collection. The portions of each sample scheduled to be analyzed for GRO and BTEX were collected first. Each soil sample aliquot was collected utilizing a clean stainless steel sampling probe, which was 0.75-inch in diameter by 12-inches long (Photograph 5 in Appendix A). Approximately 2 to 5 grams of soil were collected from each aliquot and immediately placed into a 4-ounce amber glass jar, which had the methanol added prior to sample collection. To minimize volatilization of the contaminants, sieving was not performed for any volatile analyses (GRO or BTEX) after collection of the sample. The soil probe was decontaminated with an Alconox

detergent solution, followed by a tap water rinse, between sampling each DU.

Each aliquot was carefully collected so that sufficient sample mass (more than 50 grams) was obtained to adequately address the compositional heterogeneity of the soils. The sample aliquots were collected randomly (systematically) and in enough locations (at least 37) to capture spatial variability, and to minimize grouping and segregation error. Collection of the aliquots also consisted of obtaining all particle sizes, as practical, in the population less than the 2-millimeter fraction, which aids in minimizing fundamental error (FE). Large rocks or clumps of soil were not collected as part of the sampling of volatiles, as this would increase FE. A separate 4-ounce amber, glass container of soil associated with the volatile soil sample was collected and analyzed for percent moisture.

For each aliquot collected, the sample container lid was briefly opened, the soil was added directly from the probe with the stainless steel spoon into the sample container, and the lid was replaced onto the sample container; this sampling process was repeated at each aliquot sample location. The volatile sampling procedure was accomplished as quickly as possible to reduce the loss of soil contaminants and methanol due to volatilization. Care was also taken to prevent the loss of methanol caused by splashing during the addition of soil increments and/or spillage during the entire sampling procedure.

Non-Volatile Sample Collection. MI samples to be analyzed for DRO and RRO were collected after the volatile samples were collected. The sampling procedures for the non-volatiles were generally the same as the procedures for collecting the volatile samples, except that the soil aliquots were placed directly into one-gallon Ziploc bags after collection. Approximately 30 to 60 grams of soil were collected for each sample aliquot. The entire volume (approximately 900 to 1,800 grams) of soil sample collected was submitted to SGS for sieving and sub-sampling in a controlled laboratory environment. SGS performed the sieving and sub-sampling for each non-volatile MI sample in accordance with the ADEC Guidance on Multi Incremental Soil Sampling (March 2009).

Soils in the plastic bag collected for the non-volatile sample from each DU were screened with a photoionization detector (PID) that was calibrated prior to use with 100 parts per million (ppm) isobutylene calibration gas. The field screening sample was allowed to warm to approximately 40 degrees Fahrenheit, and then the plastic bag was agitated for approximately 15 seconds within one

hour of collection, at which point the probe of the PID was inserted into the bag and the greatest reading was recorded. All PID readings for all MI samples were 0.0 ppm. It is noted that the PID readings were not documented in the field notebook.

After collection, the MI samples were labeled, placed in ice-filled coolers and shipped via Pen Air to Anchorage. BGES personnel picked up the samples at Pen Air in Anchorage and delivered the samples under chain of custody protocol to SGS, an ADEC-approved laboratory. Analytical results are presented in Table 1 and on Figure 3.

The land-farmed soils were reportedly tilled and moved around with a tractor and a tiller attachment twice during the 2013 summer season by Icicle personnel to promote biodegradation of the contaminants, and nutrients were applied between the tilling activities during 2013. Documentation of these activities was reportedly submitted to the ADEC in a report prepared by Icicle personnel.

The signs marking the land-farmed soils were inspected during the 2013 field season, and the signs appeared to be in good condition. These signs warn people to stay out of the area because contaminated soils are present (Photograph 6 in Appendix A).

3.3 Groundwater Monitoring

Groundwater Sampling Methodology. Initially, all monitoring wells were evaluated for damage (Photographs 7 through 12 in Appendix A). Several monitoring wells and piezometers had been damaged by frost heaving or a blockage between 2010 and 2013. In addition, many of the locks on the monitoring wells could not be opened because the locks had rusted; therefore, the affected locks were cut and removed. The damages observed and the repairs performed for each of the monitoring wells are presented in Table A below.

Table A. Monitoring Well/Piezometer Damages Observed and Repairs Completed

Monitoring Well or Piezometer	Damage Observed	Repair Performed
MW-1	The well was damaged by frost heaving and the lock was cut off.	Approximately 6-inches of the well casing were cut off and the cap was zip-tied to limit access to the well.
MW-4	The well was damaged by frost heaving and the lid for the flush-mounted protective cover was missing.	Approximately 2-inches of the well casing were cut off and the cap was zip-tied to limit access to the well.
MW-7	This well could not be located.	None.

Monitoring Well or Piezometer	Damage Observed	Repair Performed
MW-8	No damage was observed; however, the lock was cut off.	The cap was zip-tied to limit access to the well.
MW-9	This well was damaged by frost heaving and the lock was cut off.	Approximately 2-inches of the well casing were cut off and the cap was zip-tied to limit access to the well.
MW-10	The expandable plug was missing, but no other damage was observed. The lock was cut off.	The cap was zip-tied to limit access to the well.
MW-11	No damage was observed; however, the lock was cut off.	The cap was zip-tied to limit access to the well.
MW-12	This well was damaged by frost heaving and the expandable plug was missing.	Approximately 3-inches of the well casing were cut off and the cap was zip-tied to limit access to the well.
MW-13	No damage was observed.	The cap was zip-tied to limit access to the well.
MW-15	No damage was observed.	The cap was zip-tied to limit access to the well.
MW-16	The expandable plug was missing, but no other damage was observed.	The cap was zip-tied to limit access to the well.
MW-17	There was some type of obstruction wedged inside the well. We were not able to remove the obstruction.	The cap was zip-tied to limit access to the well.
PZ-1	This piezometer was laying on the ground and filled with sand because of frost heaving.	None.
PZ-2	This piezometer was damaged by frost heaving and was laying on the ground.	This piezometer was reinstalled.
PZ-3	This piezometer was damaged by frost heaving and the protective cover was missing.	None.
PZ-4	This piezometer was damaged by frost heaving and the protective cover was missing.	None.
PZ-5	This piezometer could not be located.	None.
PZ-6	This piezometer could not be accessed.	None.

On August 11, 2013, the water elevations were measured in each of the monitoring wells and piezometers that could be located using an electronic water-level indicator. The depth to groundwater was measured within a short time period, such that the groundwater elevations were comparable, without any effects due to barometric fluctuations, precipitation, or other factors. The electronic water level indicator was decontaminated prior to use and between monitor wells by washing the cable and sensor in an Alconox (laboratory-grade) detergent solution, followed by a potable water rinse.

Prior to the collection of the groundwater samples, the volume of water in the well or piezometer to be sampled was calculated based on the depth to water in the well/piezometer, the total depth of the well/piezometer, and the respective diameters of the well/piezometer casings. Monitoring Wells MW-16 and MW-13 and PZ-2 were purged of a minimum of three well volumes and then the groundwater samples were collected. As mentioned above, a groundwater sample could not be collected from MW-17 because an obstruction was wedged inside the well.

The groundwater samples were collected utilizing a low-flow sampling methodology and was accomplished using a positive-displacement bladder pump and disposable tubing during purging and sampling activities for Monitoring Wells MW-13 and MW-16 and Piezometer PZ-2. Upon removal of each well volume from MW-13 and MW-16, groundwater quality parameters (pH, conductivity, temperature, and oxidation reduction potential) were measured utilizing a YSI Professional Plus water quality meter and these measurements were recorded in a Groundwater Monitoring Log. Groundwater quality parameters were not documented for PZ-2. The field data gathered during purging are presented in Table 2.

The pumping rate ranged from approximately 50 milliliters per minute (ml/min) to 150 ml/min during purging and sample collection. After purging was complete, groundwater was pumped directly into the laboratory-supplied sample containers, in which case the containers for volatile analyses were filled first. Care was exercised during the sampling process to minimize the potential that headspace was created within the sample containers, and that none of the preservative was spilled from the vials destined for volatiles laboratory analyses.

The bladder pump would not fit inside Piezometer PZ-3; therefore the groundwater sample was collected utilizing a micro-bailer. No water was purged from the piezometer prior to the collection of the water sample. Groundwater was transferred from the micro-bailer directly into the laboratory-supplied sample containers.

As a quality control measure, a duplicate groundwater sample was collected from Monitoring Well MW-16 and was identified as MW-40-0812. Laboratory-supplied trip blanks accompanied the samples scheduled for the volatile analyses through the entirety of the sampling process and delivery to the laboratory.

The groundwater samples were labeled, placed in ice-filled coolers and shipped via Pen Air to Anchorage. BGES personnel picked up the samples at Pen Air in Anchorage and delivered the samples under chain of custody protocol to SGS, an ADEC-approved laboratory.

Investigative-derived waste from these activities included the water generated during purging and sampling, and decontamination water generated from decontamination of equipment. The purge water and wash water was placed in a 5-gallon bucket and then poured into the recirculation trench.

Each subsection below describes the monitoring wells and piezometers listed by geographical location, and the types of analyses that were conducted, in addition to a brief description of the type of contaminants of concern. The analytical results are presented in Table 3 and on Figure 4.

3.3.1 Beach Area

The beach area has been the site of several past fuel releases that have resulted in widespread contamination of the beach area on the southeast portion of the property. Three known sources and a potential source of contamination in this area include the historical tank farm that was located on the southeastern portion of the property; the day tank at the Freezer Plant; a subsurface gasoline pipeline originating from the gasoline tank farm; and the newer diesel and gasoline tank farm. Five monitoring wells are located in the central region of the beach area and include MW-1, MW-4, MW-7, MW-13, and MW-15. As mentioned above, groundwater samples were scheduled to be collected from MW-7, MW-13, and the interception trench during 2013.

To evaluate the quality of groundwater in the beach area, groundwater samples were collected from Monitoring Well MW-13 and the interception trench (Figure 4). A groundwater sample was not collected from Monitoring Well MW-7 during these monitoring activities because this well could not be located; it was suggested by an Icicle employee that this well had been removed (Photograph 8 in Appendix A). The groundwater samples were collected as described above in Section 3.3.

3.3.2 Inter-Tidal Area

Contamination within the inter-tidal area, just southeast of the seawall, appears to be heterogeneous in nature. Intermittent product seeps and sheens were visible beyond the seawall in the areas just northeast of the eroded gully and Freezer Plant prior to 2009 (Figure 4). A hydrocarbon sheen was not observed within the intertidal area during 2009 or 2010.

Six piezometers have been installed within the intertidal region of the beach, five of which are downgradient from the current and former tank farms. The piezometers located downgradient of the tank farm area include Piezometers PZ-1, PZ-2, PZ-3, PZ-4, and PZ-5 (Figure 4). Piezometer PZ-6 is located underneath the dock and downgradient of the boiler room (Figure 4). It is noted that PZ5 could not be located during the 2013 monitoring activities.

To evaluate the quality of groundwater in the inter-tidal area, groundwater samples were collected from Piezometers PZ-2 and PZ-3. Prior to the collection of a water sample from Piezometer PZ-2, this piezometer was replaced because it had been damaged by frost heaving (Photographs 10 and 11 in Appendix A). A boring was advanced to approximately 4.5 feet by utilizing a post hole digger; then a 6-foot long well screen was placed into the hole and natural sand was allowed to fill in the hole surrounding the piezometer. After installation, the piezometer was developed using a bailer; approximately three well volumes of water were removed from the piezometer. A water sample was collected from the newly-installed PZ-2 utilizing a low flow sampling methodology as described above in the Groundwater Sampling Methodology portion of Section 3.3. A water sample was collected from PZ-3 utilizing a micro-bailer as described above in the Groundwater Sampling Methodology portion of Section 3.3. The analytical results are presented in Table 3.

3.3.3 Mechanics' Housing Area

Monitoring Well MW-16 was installed in the southeast corner of the Mechanics' Bunkhouse former excavation because of obstructions that prevented the complete removal of contaminated soils from this area (Figure 4). It is assumed that the groundwater flow direction in this area is to the north, towards the Egegik River, thus to determine if the contaminated groundwater in this area is reaching or approaching the Egegik River, Monitoring Well MW-17 was installed downgradient and north of the Mechanics' Bunkhouse former excavation.

A groundwater sample was collected from Monitoring Well MW-16 on August 12, 2013 in order to evaluate groundwater quality southeast of the Mechanics' Bunkhouse former excavation. A groundwater sample was not collected from Monitoring Well MW-17 because an unknown obstruction was present inside the well, which prevented the submersible bladder pump or a bailer from being lowered to the appropriate depth to collect a groundwater sample (Photograph 9 in Appendix A).

All groundwater samples were collected from the monitoring wells and piezometers on August 12,

2013. The sampling methodology is discussed above in the Groundwater Sampling Methodology portion of Section 3.3. The analytical results are presented in Table 3.

3.3.4 Upper Bluff Area

Monitoring Well MW-12, located between the “new” tank farm and the Egegik River, was installed in 2005 to serve as a sentry well, should the tank farm develop a release of fuel. It is situated on the northwest side of the “Japanese House” and northeast of the tank farm (Figure 4).

Based on historical analytical results being below the ADEC cleanup criteria, Monitoring Well MW-12 was not sampled during 2013.

3.3.5 Visual Observations of Seep Areas

During 2006, observations of sheen in the seep areas by the Freezer Plant towards the Egegik River were increasingly prevalent, and illustrated an increase in contamination from what was observed in 2005; however, the additional observations of sheen may have been caused by the significant increased amounts of precipitation experienced during the 2006 field season. While the observed sheen was sometimes relatively heavy, it was also intermittent, and the source of the sheen had not been positively identified.

Prior to the interception trench construction in August 2007, a sheen was observed almost daily during low tide on the eastern side of the seawall. The areas of major sheen were observed downgradient from where the interception trench was constructed, except for some sheen that extended somewhat beyond the trench to the northwest. After the trench was constructed, the amount of sheen observed decreased daily until no sheen was observed. During 2008, a sheen was observed only once, northeast of the seawall and downgradient of the interception trench. Todd Blessing of the ADEC, observed a biofilm in a major seep near the interception trench during a 2008 site visit. During the 2009 field activities, BGES visually monitored the inter-tidal area for the presence of seeps or sheen while on site. A hydrocarbon sheen was not observed by BGES during the six days of field activities in 2009; however, a coating and sheen that appeared to be caused by iron deposition was observed to the northwest of the capture zone of the trench. The bottom of the seawall and rocks in this general vicinity were also covered with an orange iron coating.

During the 2010 field activities, BGES visually observed the inter-tidal area for the presence of

seeps or sheen while on site. A hydrocarbon sheen was not observed by BGES during the two days of field activities in 2010. The seep areas were also periodically inspected by Icicle personnel during the different seasons and during the course of (before, during, and after) rainfall events. The Icicle employee in Egegik had confirmed that sheen had not been present at the site prior to the 2010 field event.

During the 2013 field activities, BGES personnel visually observed a seep/sheen between the interception and recirculation trenches (Photograph 13 in Appendix A). It is noted that a seep and/or sheen were not observed within the inter-tidal area of the Egegik River while onsite.

3.3.6 Inspection of the Interception and Recirculation Trenches

As discussed above, an interception trench and a recirculation trench were installed during 2007, upgradient of the inter-tidal area of the beach and near the Freezer Plant (Figure 4). The interception trench was constructed to aid in reducing the amount of contamination in the inter-tidal area without removing the entire beach (Photograph 14 in Appendix A). Groundwater is captured by the interception trench, then is pumped upgradient to a recirculation trench. The interception and recirculation system works by capturing and recirculating petroleum-impacted groundwater, which has been evident by the reduction of visible hydrocarbon sheens beyond the seawall along the inter-tidal area of the Egegik River after the installation of the system in 2007. Additional benefits to this system include the washing of the contaminated soils in the bluff area and the aeration of the water via free-flow into the infiltration trench. Free-phase product has not been observed in either of the trenches since installation of the system in 2007. During 2009, maintenance activities were performed on the interception and recirculation trenches in the form of silt removal. During the 2010 field season, the interception and recirculation trenches were inspected for maintenance purposes.

A “grab” water sample was collected from the groundwater in the interception trench during the 2013 field activities, using a disposable bailer. To evaluate the system for iron bacterial growth, the groundwater sample was submitted to the laboratory for analysis of total iron. The analytical result of this sample is presented in Table 3.

Vegetation is necessary in the bluff area (where the interception trench was excavated) to minimize erosion. During the 2010 and 2013 field seasons, a substantial amount of vegetation was observed

throughout the bluff (Photograph 7 in Appendix A).

A copy of the field notes associated with the collection of MI samples and groundwater samples is included in Appendix B.

4.0 EVALUATION OF LABORATORY DATA

Laboratory analysis of soil and groundwater samples collected during the 2013 field season was conducted by SGS in Anchorage, Alaska, an ADEC-approved laboratory. Analytical results of the soil samples are listed in Table 1. The water sampling data obtained during the collection of groundwater samples are presented in Table 2. Analytical results of the groundwater samples are summarized in Table 3. Copies of the laboratory analytical reports are included in Appendix C.

The soil sample results are compared to the ADEC Method 2 Cleanup Criteria listed in 18 Alaska Administrative Code (AAC) 75.341 – Tables B1 and B2 (under 40-inch zone) for soils, as revised October 1, 2014. The cleanup concentrations were obtained from these tables listed in the “under 40-inch zone” for soils, from the migration to groundwater values, except for RRO, which was obtained from the more conservative ingestion value.

The groundwater sample results are compared to the ADEC Groundwater Cleanup Levels listed in 18 AAC 75.345, Table C, the ERBSC for freshwater use listed in ADEC’s Ecoscoping Guidance Manual (March 2009), and the surface water screening benchmarks obtained through the Risk Assessment Information System (RAIS) tool for Ecological Benchmarks [Environmental Protection Agency (EPA), Region 3, Biological Technical Assistance Group Freshwater Screening Benchmarks; EC20 Fish Surface Water Screening Benchmarks; EPA Region 6 Ecological Screening Benchmarks: Freshwater; Tier II Secondary Chronic Value (SCV) Surface Water Screening Benchmarks; EPA Region 5 Ecological Screening Levels for Resource Conservation and Recovery Act (RCRA) Appendix IX Hazardous Constituents; OSWER Tier II; and, EPA Region 4 – Chronic]. There are multiple references listed for the surface water screening benchmark values obtained from the RAIS ecological benchmark tool because the most conservative benchmark values for freshwater environments for each parameter was selected for use in the comparison of the groundwater samples collected within the inter-tidal area of the beach of the Egegik River.

As requested by Meghan Dooley, former ADEC Project Manager, both the ERBSC and the surface

water screening benchmark values (obtained from the RAIS tool) are presented in Tables 3, C, and D of this report. Additionally, TAH and TAqH concentrations were calculated based on the analytical results for VOCs and PAHs; where TAH is the sum of BTEX, and TAqH is the sum of BTEX plus the sum of PAH results. The TAH and TAqH results are compared with the water quality standards for freshwater use listed in 18 AAC 70.020, (5)(A)(iii). The ADEC cleanup criteria, ADEC water quality standards, ERBSC, and RAIS screening benchmarks obtained from these regulations and guidance documents are listed for each analyte and are presented in Tables 3, C, and D.

MI Soil Samples LF-GAS and LF-MBEX (and its associated duplicate and triplicate; LF-MBEY and LF-MBEZ, respectively) were analyzed for GRO by Alaska Method (AK) 101; DRO by AK 102; RRO by AK 103; and BTEX by EPA 8021B. MI Soil Samples LF-B1, LF-B2, LF-D1, LF-D2, LF-E1, and LF-E2 were analyzed for DRO and RRO by the same methods described above.

Groundwater Samples MW-13, MW-16, and MW-40 (duplicate sample of MW-16) were analyzed for GRO, DRO, RRO, and BTEX by the same methods described above. Water Samples PZ-2 and PZ-3 were analyzed for VOCs by EPA 8260B and PAHs by EPA Method 8270 SIMS. Additionally, the water sample collected from the Interception Trench was analyzed for total iron by EPA Method 6020.

Trip blanks accompanied all soil and groundwater samples scheduled for volatile analyses at all times during sample container handling and sampling until submission to the laboratory. The trip blanks were analyzed for GRO, BTEX, and VOCs by the same methods described above, to determine if cross-contamination of the samples had occurred.

The soil samples collected from the land-farm areas at the subject property were numbered LF-B1 and LF-GAS, where the prefix LF is an acronym for land-farm; and the -B1 and -GAS indicates which DU the sample was collected from.

The water samples collected from the monitoring wells at the subject property were numbered MW-13-0812, where the prefix MW is an acronym for monitoring well; -13 is the monitoring well number; and -0812 indicates the month and date the sample was collected. For brevity in the text and in the associated figures, these samples are referred to as MW-13 with the date omitted. The

water sample collected from Piezometers PZ-2 and PZ-3 were numbered PZ-2-0812, where the prefix PZ is an acronym for piezometer; -2 is the piezometer number; and -0812 indicates the month and date the sample was collected. For brevity in the text and in the associated figures, these samples are referred to as PZ-2 with the date omitted. Additionally the water sample collected from the interception trench was labeled Interception Trench.

Copies of the analytical reports for both soil and groundwater samples are included in Appendix C and the results for soil samples and groundwater samples are summarized in Tables 1 and 3, respectively.

4.1 Multi-Incremental Soil Samples

Eight MI soil samples, LF-B1, LF-B2, LF-D1, LF-D2, LF-E1, LF-E2, LF-GAS, and LF-MBEX were collected from DUs located within the WAFCO land-farm areas as described above. Soil Samples LF-MBEY and LF-MBEZ are the duplicate and triplicate samples, respectively, of Soil Sample LF-MBEX. All soil samples exhibited DRO concentrations that ranged from 182 milligrams per kilogram (mg/Kg) to 1,020 mg/Kg. All DRO concentrations exceeded the ADEC cleanup criterion for DRO of 250 mg/Kg, with the exception of LF-MBEY, which exhibited a DRO concentration of 182 mg/Kg, which was below the ADEC cleanup criterion for DRO. Soil Samples LF-B2 and LF-GAS both exhibited the DRO concentration of 1,020 mg/Kg, which was the maximum reported DRO concentration in the MI samples. All eight soil samples exhibited RRO concentrations that ranged from 202 mg/Kg to 506 mg/Kg, which are all below the ADEC cleanup criterion for RRO of 10,000 mg/Kg. Soil Samples LF-GAS, LF-MBEX, LF-MBEY, and LF-MBEZ exhibited non-detectable concentrations of all remaining analytes, which were below the laboratory's limits of quantitation (LOQs) and ADEC cleanup criteria.

Analytical results for the soil samples are summarized in Table 1 and on Figure 3, and a copy of the laboratory data package is included in Appendix C.

Statistical Analysis of the Triplicate Samples

The relative standard deviation (RSD) for the triplicate samples collected was calculated following ADEC guidance and the results are included in Table B below. Samples that were collected from the land-farm in triplicate originated from weathered soils placed in the land-farm prior to 2006.

The MI sample, the duplicate MI sample, and the triplicate MI sample were collected from LF-MBEX. Analytes reported above the MRLs are tabulated below for statistical analysis, as recommended by the ADEC.

Table B. Land-Farm Triplicate Calculations

Analyte	LF-MBEX (mg/Kg)	LF-MBEY (mg/Kg)	LF-MBEZ (mg/Kg)	Mean	Standard Deviation	RSD (%)	95 Percent UCL
DRO	281	182	312	258	68	26	373
RRO	283	385	506	391	112	29	580

Notes:

RSD = relative standard deviation; UCL = upper confidence limit (one-sided)

The ADEC guidance requires a RSD of 30 percent or less in order for a data set to be considered normally distributed. Both of the calculated RSDs from LF-MBEX met the ADEC criteria of less than 30 percent, indicating that the data distribution set was normal and the precision of the MI sampling data is acceptable.

The 95-percent upper confidence levels (UCLs), a variable associated with the uncertainty of estimating the true average contaminant concentration of the DU, were also calculated for the triplicate samples. The 95-percent UCLs, in comparison to the ADEC cleanup criteria, indicated that only DRO was above the cleanup criterion at 373 mg/Kg. The UCLs for the remainder of the parameters could not be calculated because the soil samples exhibited non-detectable concentrations for the remaining analytes.

4.2 Groundwater Samples

Of the twelve monitoring wells at the subject property, only MW-13 and MW-16 were sampled during the 2013 field season. A water sample was not collected from Monitoring Well MW-7 because this well could not be located; a water sample was not collected from Monitoring Well MW-17 because an unknown blockage was present in the well and the submersible bladder pump could not be lowered to the appropriate depth to obtain a groundwater sample. Of the six piezometers located in the inter-tidal region of the beach, only PZ-2 and PZ-3 were sampled during the 2013 field season. The locations of the monitoring wells and piezometers are depicted on Figure 4.

4.2.1 Inter-Tidal Area of the Beach

Water samples were collected from PZ-2 and PZ-3 and were analyzed for VOCs and PAHs by the methods described above.

Water Sample PZ-2 exhibited concentrations of fluoranthene, fluorene, phenanthrene, and pyrene which are below ADEC cleanup criteria. The concentrations of fluoranthene and pyrene exceeded their respective ERBSCs for freshwater and surface water screening benchmark values. PZ-2 exhibited non-detectable concentrations of all other analytes, which were below the laboratory's LOQs and/or below ADEC cleanup criteria (Table 3).

Water Sample PZ-3 exhibited a benzene concentration that exceeds the ADEC cleanup criterion. This water sample exhibited concentrations of 1-methylnaphthalene, 2-methylnaphthalene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 4-isopropyltoluene, ethylbenzene, isopropylbenzene, n-propylbenzene, sec-butylbenzene, tert-butylbenzene, and total xylenes, which are below their respective ADEC cleanup criteria. Water Sample PZ-3 exhibited concentrations of fluoranthene, pyrene, benzene, ethylbenzene, naphthalene, and total xylenes, which exceed both their respective ERBSCs for freshwater and surface water screening benchmark values. The calculated values for TAH and for TAqH for PZ-3 exceeded the ADEC's water quality standards for freshwater. Additionally, this water sample exhibited concentrations of 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene which exceeded their respective surface water screening benchmark values. PZ-3 exhibited non-detectable concentrations of all other analytes, which were below the laboratory's LOQs and/or below ADEC cleanup criteria.

The LOQs for 1,2,3-trichloropropane and 1,2-dibromoethane in Water Samples PZ-2 and PZ-3 were above their the ADEC cleanup criteria. As such, it cannot be determined if the actual concentrations of these analytes within these water samples exceed the applicable ADEC cleanup criteria for these constituents.

4.2.2 Beach Area

Monitoring Well MW-13 is located in the central region of the beach. The groundwater sample collected from MW-13 was analyzed for GRO, BTEX, DRO, and RRO by the methods described

above. Water Sample MW-13 exhibited DRO, RRO, and benzene concentrations at 2.01 mg/L, 1.12 mg/L, and 0.0111 mg/L, respectively; all of which are above their respective ADEC cleanup criteria. MW-13 exhibited non-detectable concentrations of all other analytes, which were below the laboratory's LOQs and the ADEC cleanup criteria.

4.2.3 Mechanics' Housing Area

Monitoring Well MW-16 is located downgradient of the remaining soil contamination adjacent to the Mechanics' Housing former excavation. The groundwater sample collected from MW-16 was analyzed for GRO, BTEX, DRO, and RRO by the methods described above.

Water Samples MW-16 and MW-40 (duplicate sample of MW-16) exhibited DRO concentrations of 20.3 mg/L and 22.7 mg/L, respectively; which exceed the ADEC cleanup criterion. Water Samples MW-16 and MW-40 (duplicate sample of MW-16) exhibited concentrations of GRO, RRO, benzene, and total xylenes, which are below the ADEC cleanup criteria. This water sample also exhibited non-detectable concentrations of toluene and ethylbenzene, which are below the laboratory's LOQs and the ADEC cleanup criteria.

Analytical results for the groundwater samples are summarized in Table 3 and on Figure 4. A copy of the laboratory data package is included in Appendix C.

5.0 LABORATORY DATA QUALITY REVIEW

Data quality was reviewed in accordance with ADEC guidance and standard industry practices. An ADEC laboratory data review checklist completed for each laboratory work order provides an overview of the quality of the laboratory data, and the checklists are attached in Appendix D. The following is a discussion of our evaluation of sample conditions and laboratory procedures during these field activities. The analyses were conducted by SGS of Anchorage, which is an ADEC-approved laboratory. Coolers were shipped by BGES personnel from Egegik to Anchorage by air and picked up in Anchorage by BGES personnel and hand-delivered to the laboratory under chain of custody protocol.

Work Order 1133826 (Soil Samples)

The samples contained the proper preservatives for the requested analyses and no unusual sample

conditions were noted by the laboratory. Trip blanks accompanied all volatile samples through the entirety of the sampling process and delivery to the laboratory. The case narrative for this work order noted that there were no QC failures identified by SGS.

The temperature of the cooler with the soil samples was measured to be 1.9 degrees C. This temperature is slightly below the prescribed optimal temperature range of 4 degrees +/- 2 degrees Celsius (C). Because the temperature of the cooler was below the optimal temperature, it is our opinion that there is a reduced potential for degradation of the analytes and this QC failure does not affect the acceptability of the data for their intended use.

As mentioned above, the RSD was calculated for the set of triplicate samples instead of the relative percent difference (RPD). The RSD was calculated only for the concentrations detected above the LOQs. DRO and RRO had acceptable RSDs of 26.3 percent and 28.5 percent, respectively, which are less than the ADEC acceptable limit of 30 percent. These results indicate the data set was normally distributed and the precision of the MI sampling data was acceptable.

Work Order 1133805 (Water Samples)

The samples contained the proper preservatives for the requested analyses and no unusual sample conditions were noted by the laboratory. A trip blank accompanied the samples through the entirety of the sampling process and delivery to the laboratory, and all analyses of the water samples were performed within the required holding times. The case narrative for Work Order Number 1133805 (water samples collected on August 12, 2013) noted that there were some QC failures identified by SGS.

The temperature of the cooler with the water samples was measured at the laboratory at the time of receipt to be 0.2 degree C. This temperature is below the prescribed optimal temperature range of 4 degrees +/- 2 degrees C. Because the temperature of the cooler was below the optimal temperature, it is our opinion that there is a reduced potential for degradation of the analytes and this quality control (QC) failure does not affect the acceptability of the data for their intended use.

According to SGS, the recoveries of several analytes within a continuing calibration verification (CCV) sample for the VOCs analyses did not meet the laboratory's QC criteria and were considered to be biased high indicating a potential for these analytes in associated field samples to be biased

high. However, because these analytes (according to SGS) were not reported at concentrations above the LOQs in the associated field samples, it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The percent recovery of chloromethane in the laboratory control sample (LCS), laboratory Sample Number 1168865, and the laboratory control sample duplicate (LCSD), laboratory Sample Number 1168866, exceeded the laboratory's acceptance limit (144 percent and 139 percent, respectively), indicating a potential for the reported concentration of chloromethane to be biased high. Chloromethane was not detected above the LOQ in the associated Field Samples PZ-2, PZ-3, and the trip blank, therefore, it is our opinion that this QC failure does not affect the interpretation of the data.

Water Sample MW-40 was a duplicate of Water Sample MW-16. The RPDs between the reported concentrations of DRO, RRO, and benzene within MW-16 and duplicate sample MW-40 were calculated and ranged from 11 to 15 percent; less than the ADEC acceptable limit of 30 percent. This indicates excellent sampling precision was achieved for this water sample and its duplicate water sample. The RPDs for the remaining analytes could not be calculated, because they were not detected in one or both of these samples.

As discussed in Section 4.0, above; the LOQs for 1,2,3-trichloropropane and 1,2-dibromoethane for PZ-2 and PZ-3 exceeded their respective ADEC cleanup criteria. As such, it cannot be determined if the actual concentrations of these analytes within these samples exceeded the applicable ADEC cleanup criteria for these analytes.

Laboratory data quality control review checklists are provided for each SGS data package in Appendix D.

6.0 CONCEPTUAL SITE MODEL

Details of past releases and remedial actions were discussed above in Section 2.0, and in the following reports prepared by BGES:

- Phase II ESA Report (November 2005)
- Additional Characterization and Remediation Report (February 2006)
- Additional Characterization and Remediation Report (February 2007)

- Site Remediation and Monitoring Report (March 2008)
- Site Remediation and Monitoring Report (March 2009)
- Site Remediation and Monitoring Report for 2009 Field Season (April 2010)
- WAFCO Monitoring Report for 2010 Field Season (March 2011).

Because no significant changes to the site have taken place since the previous reporting period (2010) the previously created conceptual site model (CSM), as described in detail in the WAFCO Site Remediation and Monitoring Report for 2009 Field Season (May 2010), is considered to be accurate. As described above and in previous reports, contamination at the Icicle facility originated from a variety of recent and historical sources, and several locations at the subject property are impacted to various degrees by releases of petroleum hydrocarbons, thus risks have been evaluated separately by geographical region above. Although portions of the impacted soils have been removed from the subject property, in some areas, surface and subsurface soils, groundwater, surface water, and sediments continue to exhibit petroleum hydrocarbon contaminants above ADEC cleanup criteria.

The remaining contaminants may be transported by the uptake of plants, animals, volatilization to outdoor or indoor air, transport and deposition from fugitive dust, or migration through groundwater and surface water flow. As stated above, complete and incomplete current and future ecological and human pathways for exposures to these contaminants are described in detail in the WAFCO Site Remediation and Monitoring Report for 2009 Field Season (May 2010), provided under separate cover.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Monitoring activities at the subject property were conducted during August of 2013. The results of the activities and recommendations for continued monitoring activities are discussed below by geographical area. The background of each geographical area is presented in Section 2 above.

7.1 Land-Farmed Soils

Approximately 8,421 cubic yards of impacted soil, previously excavated from various areas of the facility, are spread at the land-farm. The WAFCO land-farm area has been separated into 12 smaller areas (DUs) based on the degree and type of soil contamination. Analytical results from the

2007 and 2008 MI sampling activities indicated that the DUs should be approximately ¼-acre or smaller in order to obtain a normal data distribution set with acceptable precision. All of the DUs sampled during the 2013 field season were less than or approximately equal to 0.25-acre in size, except for LF-E1 (0.26 acre) and LF-D2 (0.37 acre). The same DU designations utilized during the 2007 and 2008 sampling events were used during the 2013 sampling activities (Figure 2).

To monitor the degradation of contaminants and to determine if ADEC cleanup levels have been achieved, MI samples were collected from each of the remaining eight DUs (LF-B1, LF-B2, LF-D1, LF-D2, LF-E1, LF-E2, LF-MBEX, and LF-GAS) during the 2013 field season. Eight MI samples plus a duplicate and triplicate sample set were collected from these DUs during the 2013 field season (Figure 2). The DRO concentrations ranged from 182 mg/Kg to 1,020 mg/Kg; all DRO concentrations exceeded the ADEC cleanup criterion of 250 mg/Kg for DRO, except for one sample. The MI sample that did not exceed, exhibited a DRO concentration of 182 mg/Kg and was part of the triplicate sample set collected from the LF-MBEX DU area. All remaining analytes for all of the MI samples exhibited concentrations that were below ADEC cleanup criteria and/or were non-detectable. In addition, The land-farm soils were tilled by Icicle personnel during 2013 to promote aeration of the soils and enhance biodegradation.

BGES recommends that the land-farm soils be tilled at least twice during each summer and that nutrients be applied to the land-farm soils at least once every summer until the DRO concentrations in the soils decrease to concentrations below the ADEC cleanup criterion. BGES recommends that each of the WAFCO land-farm decision units be sampled again in two to three years to evaluate the degradation of soil contamination in the land-farmed soils.

7.2 Beach Area

7.2.1 Inter-Tidal Area of the Beach

An interception trench was constructed during the 2007 field activities just above the inter-tidal portion of the central beach area of the property, downgradient from the major seep areas, and to a depth below groundwater. A recirculation trench was constructed upgradient and perpendicular to the center of the interception trench (with respect to the groundwater flow direction) to promote recirculation of the groundwater within the capture zone of the interception trench. Re-circulating the water in this manner has resulted in some measure of washing of the contaminated soils in

between the trenches, in addition to providing a mechanism for aerating the contaminated water. Soon after the trenches were operational in 2007, a sheen was no longer observed beyond the seawall except on a few occasions. The effluent captured in the interception trench often appears to have a slight sheen, indicating the presence of dissolved-phase petroleum hydrocarbons, but no evidence of measurable free product has been observed. The groundwater remediation system was activated during August of 2007 and has operated during the summer seasons of 2008 through 2013. Typically, the system is shut down from late-fall through late-spring because of freezing conditions.

During the 2013 field season, a water sample was collected from the interception trench to evaluate whether or not there has been an increase in bacterial growth in the remediation system. The water sample collected from the interception trench exhibited a non-detectable concentration of total iron, a significant decrease from 21.7 mg/L in 2010. System operability is optimal in the summer months, as freezing temperatures has precluded its use during the winter months; however, during the winter, reduced precipitation infiltration results in a reduction of contaminant migration to the Egegik River, even while the system is shut down. At this time, the groundwater remediation system appears to be generally effective based on the decreased and intermittent observations of a visible sheen in the inter-tidal zone of the Egegik River since the construction of the recirculation trench; and based on the reduced concentrations of petroleum contaminants in Piezometers PZ-2 and PZ-3. It is noted that a seep/sheen was observed between the interception and recirculation trenches during 2013 field activities. It is recommended that this area continue to be visually monitored, and that groundwater samples continue to be collected from Piezometers PZ-2 and PZ-3 in this area to monitor groundwater quality within the intertidal zone.

7.2.2 Piezometers

Contamination in the inter-tidal region, just southwest of the seawall, appears to be heterogeneous in nature. Intermittent product seeps and sheen were historically visible beyond the seawall in the areas just northeast of the eroded gully and Freezer Plant prior to the construction of the interception and recirculation trenches. Two piezometers, PZ-2 and PZ-3, located downgradient of the interception trench were sampled after the interception and recirculation trenches were installed in 2007 and 2008. As previously mentioned, a water sample was not collected from Piezometer PZ-2 during the 2009 and 2010 field seasons. After the replacement of Piezometer PZ-2 during the

2013 field season activities, Water Sample PZ-2, exhibited concentrations of fluoranthene and pyrene that exceeded their respective ERBSCs for freshwater and the surface water screening benchmark values. The historical analytical results for PZ-2 from 2005 through 2013 shows a decreasing trend in concentrations. The historical analytical results from 2005 through 2013 for Piezometer PZ-2 are presented below in Table C.

Water Sample PZ-3 exhibited a benzene concentration that exceeds the ADEC cleanup criterion and concentrations of fluoranthene, pyrene, benzene, ethylbenzene, naphthalene, and total xylenes, which exceed both their respective ERBSCs for freshwater and surface water screening benchmark values. The calculated values for TAH and for TAqH for PZ-3 exceeded the ADEC's water quality standards for freshwater. Additionally, this water sample exhibited concentrations of 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene which exceeded their respective surface water screening benchmark values. In summary, water samples collected from PZ-3 have exhibited generally decreasing trends from 2005 through 2013. The calculated TAH and TAqH values have also exhibited a decreasing trend from 2005 through 2013. The historical BTEX analytical results from 2005 through 2013 for Piezometer PZ-3 are depicted graphically in Figure 5, and all analytical results are presented below in Table D.

Based on these results, we recommend that groundwater monitoring continue for Piezometers PZ-2 and PZ-3 in the future, so that the water quality can be monitored within the inter-tidal area of the Egegik River. We also recommend that Icicle personnel continue the visual inspections in order to evaluate, the presence and the magnitude of seeps and sheens, if any, along the inter-tidal areas of the beach and between the interception and recirculation trenches.

Table C. Piezometer PZ-2 Analytical Results 2005 - 2013

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹ (mg/L)	Freshwater ERBSC (mg/L) ³	Surface Water Screening Benchmark Values (mg/L) ⁴
TAH ⁵	ND	0.00278	ND	ND	NS	ND	N/A	0.010 ²	N/A
TAqH ⁶	0.18482	0.0002869J	NS	0.00215 ⁷	NS	0.0003104	N/A	0.015 ²	N/A
DRO	NS	NS	< 0.394	NS	NS	NS	1.5	N/A	N/A
RRO	NS	NS	< 0.394	NS	NS	NS	1.1	N/A	N/A
GRO	NS	NS	< 0.0500	NS	NS	NS	2.2	N/A	N/A
Benzene	< 0.000400	0.00150	< 0.000500	0.00215	NS	<0.000400	0.005	0.0130	0.021 ^a
Total Xylenes	< 0.00200	0.00128 J	< 0.00150	< 0.0010	NS	<0.00300	10	0.0130	0.013 ^{b, c}
Acenaphthylene	0.00302	< 0.0000532	NS	< 0.00990	NS	<0.0000546	2.2	N/A	4.84 ^e
Acenaphthene	0.00136	0.0000223 J	NS	< 0.00990	NS	<0.0000546	2.2	0.00580	0.0058 ^b
Anthracene	<u>0.00360</u>	<u>0.0000196 J</u>	NS	< 0.00990	NS	<0.0000546	11	0.000012	0.000012 ^b
Benzo(a)anthracene	0.0137	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.0012	0.000018	N/A
Benzo[b]fluoranthene	0.0138	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.0012	N/A	0.00907 ^e
Benzo[k]fluoranthene	0.00769	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.012	N/A	N/A
Benzo[g,h,i]perylene	<u>0.0107</u>	< 0.0000532	NS	< 0.00990	NS	<0.0000546	1.1	N/A	0.00764 ^e
Benzo[a]pyrene	0.0165	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.0002	0.000014	0.000014 ^{c, d, e, f}
Chrysene	<u>0.0130</u>	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.12	N/A	0.007 ^d
Dibenzo[a,h]anthracene	0.00292	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.00012	0.0000270	0.005 ^d
Fluoranthene	<u>0.0345</u>	0.0000354 J	NS	< 0.00990	NS	<u>0.0000644</u>	1.5	0.0000400	0.00004 ^b
Fluorene	0.00261	0.0000381 J	NS	< 0.00990	NS	0.000109	1.5	0.00300	0.003 ^b

Table C. Piezometer PZ-2 Analytical Results 2005 – 2013 (continued)

Indeno[1,2,3-c,d] pyrene	<u>0.00942</u>	< 0.0000532	NS	< 0.00990	NS	<0.0000546	0.0012	N/A	0.00431 ^e
Naphthalene	< 0.001030	0.0000472 J	NS	< 0.00990	NS	<0.000109	0.73	0.001100	0.0011 ^b
Phenanthrene	<u>0.0148</u>	0.0000900	NS	< 0.00990	NS	0.0000673	11	0.000400	0.0004 ^b
Pyrene	<u>0.0372</u>	<u>0.0000343 J</u>	NS	< 0.00990	NS	<u>0.0000697</u>	1.1	0.0000250	0.000025 ^b

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345 Table C; October 1, 2014.

² = Water quality criteria for TAH and TAqH based on 18 AAC 70.020 water quality standards for freshwater use (5)(A)(iii).

³ = ERBSC values were obtained from the ADEC Ecoscoping Guidance, March 2009

⁴ = Surface water screening benchmark values were obtained from the Risk Assessment Information System (RAIS) Ecological Benchmark tool. There are multiple references listed for the surface water screening benchmark values obtained from the RAIS ecological benchmark tool because the most conservative benchmark values for fresh water environments for each parameter was selected for use in the comparison of the groundwater samples collected within the inter-tidal area of the beach of the Egegik River.

⁵ = TAH was calculated as the sum of benzene, toluene, ethylbenzene, and total xylenes

⁶ = TAqH was calculated as the sum of benzene, toluene, ethylbenzene, total xylenes, and PAHs.

⁷ = Benzene only. Toluene, ethylbenzene, total xylenes, and PAHs were not detected above the MRLs.

^a = EC20 Fish Surface Water Screening Benchmark values

^b = EPA Region 3 Biological Technical Assistance Group Freshwater Screening Benchmark values

^c = Tier II Secondary Chronic Value (SCV) Surface Water Screening Benchmarks values

^d = EPA Region 6 Ecological Screening Benchmark values for Freshwater

^e = EPA Region 5 Ecological Screening Levels for Resource Conservation and Recovery Act (RCRA) Appendix IX Hazardous Constituents

^f = OSWER Tier II

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics;

TAH = total aromatic hydrocarbons; TAqH = total aqueous hydrocarbons

J = sample result is an estimate; mg/L = milligrams per liter; ND = not detected; NS = not sampled

Analytical result that is **bold** exceeds the ADEC cleanup criterion or the TAqH value.

Analytical result that is **bold** and *italicized* exceeds the ADEC cleanup criterion and the Freshwater ERBSC value.

Analytical result that is *italicized* exceeds the Freshwater ERBSC value and the Surface Water Screening Benchmark value.

Analytical result that is underlined exceeds the Surface Water Screening Benchmark value.

Analytical result that is **bold** and underlined exceeds the ADEC cleanup criterion and the Surface Water Screening Benchmark value.

Analytical result that is **bold**, *italicized*, and underlined exceeds the ADEC cleanup criterion, the Freshwater ERBSC value, and the Surface Water Screening Benchmark value.

Table D. Piezometer PZ-3 Analytical Results 2005 - 2013

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2010 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹	Freshwater ERBSC (mg/L) ³	Surface Water Screening Benchmark Values (mg/L) ⁴
TAH ⁵	NS	2.2684	NS	9.7323	8.510	19.06	0.1531	N/A	0.010 ²	N/A
TAqH ⁶	0.009543	0.0006603	NS	9.8724	8.535	19.16	0.1590532	N/A	0.015 ²	N/A
DRO	NS	NS	1.06	NS	NS	NS	NS	1.5	N/A	N/A
RRO	NS	NS	5.110	NS	NS	NS	NS	1.1	N/A	N/A
GRO	NS	NS	0.480	NS	NS	NS	NS	2.2	N/A	N/A
Benzene	NS	<u>1.640</u>	<u>0.917</u>	<u>0.412</u>	<u>0.200</u>	0.00979	<u>0.0368</u>	0.005	0.0130	0.021 ^a
Toluene	NS	<u>0.123</u>	< 0.0500	<u>2.210</u>	<0.100	<u>0.185</u>	<0.00100	1.0	0.0130	0.013 ^{b,c}
Chlorobenzene	NS	< 0.00500	NS	NS	<0.100	<0.00100	<0.000500	0.1	0.00130	NA
Ethylbenzene	NS	<u>0.0890</u>	<u>0.0813</u>	<u>1.420</u>	<u>1.570</u>	<u>3.25</u>	<u>0.0245</u>	0.7	0.00730	0.0073 ^c
Total Xylenes	NS	<u>0.416</u>	<u>0.193</u>	<u>5.690</u>	<u>6.740</u>	<u>15.62</u>	<u>0.0918</u>	10	0.0130	0.013 ^{b,c}
1,3-Dichlorobenzene	NS	< 0.00100	NS	NS	<0.100	<0.00100	<0.00100	3.3	NA	0.038 ^e
1,4-Dichlorobenzene	NS	< 0.000500	NS	NS	<0.100	<0.00100	<0.000500	0.075	NA	0.0094 ^e
1,2-Dichlorobenzene	NS	< 0.00100	NS	NS	<0.100	<0.00100	<0.00100	0.6	NA	0.0007 ^b
n-Butylbenzene	NS	NS	NS	0.00583	<0.500	0.0284	<0.00100	0.37	NA	0.071 ^d
trans-1,3-Dichloropropene	NS	NS	NS	<u>0.0199</u>	<0.100	<0.00100	<0.00100	0.0085	NA	0.000055 ^c
n-Hexane	NS	NS	NS	<u>0.0180</u>	NS	NS	NS	NA	0.000580	0.00058 ^{b,c,d}
Isopropylbenzene	NS	NS	NS	0.0338	<0.200	0.167	0.0106	3.7	NA	NA
4-Isopropyltoluene	NS	NS	NS	0.00593	<0.200	0.0362	0.0443	NA	NA	NA
n-Propylbenzene	NS	NS	NS	0.0530	<0.100	<u>0.185</u>	0.0119	0.37	NA	0.128 ^{b,d}
1,2,4-Trimethylbenzene	NS	NS	NS	<u>0.419</u>	<u>1.090</u>	<u>2.5</u>	<u>0.368</u>	1.8	NA	0.033 ^b

Table D. Piezometer PZ-3 Analytical Results 2005 – 2013 (continued)

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2010 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹	Freshwater ERBSC (mg/L) ³	Surface Water Screening Benchmark Values (mg/L) ⁴
1,3,5-Trimethylbenzene	NS	NS	NS	<u>0.0977</u>	<u>0.213</u>	<u>0.692</u>	<u>0.202</u>	1.8	NA	0.071 ^{b,d}
Acenaphthylene	< 0.0000500	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	2.2	N/A	4.84 ^e
Acenaphthene	0.000454	0.0000501 J	NS	NS	<0.000381	0.000228	<0.0000500	2.2	0.00580	0.0058 ^b
Fluorene	0.000984	0.000155	NS	NS	<0.000381	0.000581	0.000606	1.5	0.00300	0.003 ^b
Phenanthrene	<u>0.00111</u>	0.000100	NS	NS	<0.000381	0.000284	0.000157	11	0.000400	0.0004 ^b
Anthracene	<u>0.000123</u>	<u>0.0000186 J</u>	NS	NS	<0.000381	<0.0000952	<0.0000500	11	0.000012	0.000012 ^b
Fluoranthene	<u>0.00115</u>	0.0000167 J	NS	NS	<0.000381	<0.0000952	<u>0.0000882</u>	1.5	0.0000400	0.00004 ^b
Pyrene	<u>0.00104</u>	<u>0.0000199 J</u>	NS	NS	<0.000381	<0.0000952	<u>0.000130</u>	1.1	0.0000250	0.000025 ^b
Benzo(a)Anthracene	<u>0.000289</u>	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.0012	0.000018	N/A
Chrysene	0.000325	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.12	N/A	0.007 ^d
Benzo[b] Fluoranthene	0.000430	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.0012	N/A	0.00907 ^e
Benzo[a]pyrene	<u>0.000299</u>	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.0002	0.000014	0.000014 ^{c,d,e,f}
Indeno[1,2,3-c,d] pyrene	0.000216	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.0012	N/A	0.00431 ^e
Dibenzo[a,h] anthracene	0.0000945	< 0.0000526	NS	NS	<0.000762	<0.000190	<0.0000500	0.00012	0.0000270	0.005 ^d
Benzo[g,h,i] perylene	0.000244	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	1.1	N/A	0.00764 ^e
Naphthalene ⁵	<u>0.00263</u>	0.000300	NS	<u>0.0273</u>	<u>0.0245</u>	<u>0.102</u>	<u>0.00585</u>	0.73	0.001100	0.0011 ^b
Benzo[k] fluoranthene	0.000154	< 0.0000526	NS	NS	<0.000381	<0.0000952	<0.0000500	0.012	N/A	N/A
3 & 4-Methylphenol (m,p-Cresols)	NS	NS	NS	0.0420	NS	NS	NS	0.18 - 1.8	NA	0.025 - 0.062 ^e

Table D. Piezometer PZ-3 Analytical Results 2005 – 2013 (continued)

2-Methylphenol (o-Cresol)	NS	NS	NS	0.0278	NS	NS	NS	1.8	NA	0.13 ^{b,c}
2,4-Dimethylphenol	NS	NS	NS	<u>0.0429</u>	NS	NS	NS	0.73	NA	0.0212 ^g

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345 Table C; October 1, 2014.

² = Water quality criteria for TAH and TAqH based on 18AAC70.020 water quality standards for freshwater use (5)(A)(iii).

³ = ERBSC values were obtained from the ADEC Ecoscoping Guidance, March 2009

⁴ = Surface water screening benchmark values were obtained from the Risk Assessment Information System (RAIS) Ecological Benchmark tool. There are multiple references listed for the surface water screening benchmark values obtained from the RAIS ecological benchmark tool because the most conservative benchmark values for fresh water environments for each parameter was selected for use in the comparison of the groundwater samples collected within the inter-tidal area of the beach of the Egegik River.

⁵ = TAH was calculated as the sum of benzene, toluene, ethylbenzene, and total xylenes

⁶ = TAqH was calculated as the sum of benzene, toluene, ethylbenzene, total xylenes, and PAHs.

^a = EC20 Fish Surface Water Screening Benchmark values

^b = EPA Region 3 Biological Technical Assistance Group Freshwater Screening Benchmark values

^c = Tier II Secondary Chronic Value (SCV) Surface Water Screening Benchmark values

^d = EPA Region 6 Ecological Screening Benchmark values for Freshwater

^e = EPA Region 5 Ecological Screening Levels for Resource Conservation and Recovery Act (RCRA) Appendix IX Hazardous Constituents

^f = OSWER Tier II

^g = EPA Region 4 - Chronic

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics; J = sample results is an estimate;

TAH = total aromatic hydrocarbons; TAqH = total aqueous hydrocarbons; mg/L = milligrams per liter; NS = not sampled

Analytical result that is **bold** exceeds the ADEC cleanup criterion or the TAH or TAqH value.

Analytical result that is **bold** and *italicized* exceeds the ADEC cleanup criterion and the Freshwater ERBSC value.

Analytical result that is *italicized* exceeds the Freshwater ERBSC value and the Surface Water Screening Benchmark value.

Analytical result that is underlined exceeds the Surface Water Screening Benchmark value.

Analytical result that is **bold** and underlined exceeds the ADEC cleanup criterion and the Surface Water Screening Benchmark value.

Analytical result that is **bold, italicized, and underlined** exceeds the ADEC cleanup criterion, the Freshwater ERBSC value, and the Surface Water Screening Benchmark value.

7.2.3 Monitoring Wells in the Beach Area

The beach area has been the site of several historic fuel releases that have resulted in widespread contamination of the beach area on the southeast end of the property. The known and potential sources of contamination in this area include the former tank farm that was located on the southeast end of the property; the day tank at the Freezer Plant; a subsurface gasoline pipeline originating from the gasoline tank farm; and the current diesel and gasoline tank farm. Several excavations have been completed in the beach area, as discussed in previous BGES reports. The locations of the monitoring wells located in the beach area are depicted in Figure 4.

Monitoring Well MW-13 is located in the central region of the beach and between the recirculation trench and the interception trench. Water Sample MW-13, which was collected in 2013, exhibited concentrations of DRO, RRO, and benzene; all of which exceeded their respective ADEC cleanup criteria. In summary, benzene and GRO in the water samples has a generally decreasing trend from 2005 through 2013. However, DRO and RRO have an increasing trend from 2005 through 2013. We recommend that groundwater monitoring be conducted for Monitoring Well MW-13 in the future, to continue to monitor the water quality trends in this area. The historical analytical results from 2005 through 2009 for MW-13 are presented below in Table E.

Table E. Monitoring Well MW-13 Analytical Results 2005 – 2013

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹ (mg/L)
Benzene	0.485	0.772	NS	NS	0.198	0.0111	0.005
Toluene	<0.002	<0.00200	NS	NS	<0.0050	<0.00100	1.0
Ethylbenzene	<0.002	0.000933 J	NS	NS	<0.0050	<0.00100	0.7
Total Xylenes	<0.002	0.003129 J	NS	NS	<0.0150	<0.00200	10
GRO	1.070	1.050	NS	NS	0.470	<0.100	2.2
DRO	1.69	1.14	NS	NS	2.75	2.01	1.5
RRO	0.618	0.551	NS	NS	0.781	1.12	1.1

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345 Table C; October 1, 2014.

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics

J = sample result is an estimated value; mg/L = milligrams per liter; NS = not sampled

Analytical results that are **bold** exceed the ADEC cleanup criterion.

Monitoring well MW-15 is located in the central area of the beach and in the vicinity of the former fuel tank farm. Initially, a water sample was collected from this well prior to the installation of the groundwater remediation system. Petroleum contamination was not detected in the water sample collected in 2005. The detected concentrations of benzene, DRO, and RRO were below the ADEC cleanup criteria during 2006. As previously discussed, a water sample was not collected in 2009 or 2010 because the well was found to be dry on both occasions. Because water samples collected during the 2005 and 2006 field seasons exhibited concentrations of contaminants below the laboratory's MRLs and below ADEC cleanup criteria, and because the well was found to be dry during the 2009, 2010, and 2013 field seasons; it is recommended that MW15 be properly abandoned and decommissioned. The historical analytical results from 2005 through 2013 for MW-15 are presented below in Table F.

Table F. Monitoring Well MW-15 Analytical Results 2005 – 2013

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2010 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹ (mg/L)
Benzene	< 0.000500	0.000332 J	NS	NS	NS	NS	NS	0.005
Toluene	<0.002	<0.00200	NS	NS	NS	NS	NS	1.0
Ethylbenzene	<0.002	<0.00200	NS	NS	NS	NS	NS	0.7
Total Xylenes	<0.002	<0.00200	NS	NS	NS	NS	NS	10.0
GRO	<0.090	<0.100	NS	NS	NS	NS	NS	2.2
DRO	<0.300	0.0696 J	NS	NS	NS	NS	NS	1.5
RRO	<0.500	0.313 J	NS	NS	NS	NS	NS	1.1

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345 Table C; October 1, 2014.

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics

J = sample results is an estimate; mg/L = milligrams per liter; NS = not sampled

7.3 Tank Farm Area

The bulk fuel tank farm is located upgradient of the central and inter-tidal region of the beach areas. During the 2006 field season, seeps, staining, and stressed vegetation were observed in the immediate vicinity of the diesel tank farm. The secondary containment itself contained a significant quantity of rainwater and floating product. Breaches in the bladder and concrete secondary containment system allowed product and contaminated water to be released to surface and near-surface soils. The contamination appeared to be associated with diesel fuel, which would be consistent with fuel stored in the tank farm. Some of the visually contaminated soils from the

northeast side of the diesel tank farm were excavated by hand during 2007, and the remaining accessible impacted soils were removed during 2008.

Icicle replaced four diesel aboveground storage tanks (ASTs) with two, 20,000-gallon, double-walled tanks, instead of replacing the bladder at the tank farm. Since these two large diesel ASTs are double-walled, the old bladder that was compromised was removed from the cement containment.

During the 2008 assessment activities, the former gasoline tank farm soils were assessed. There were two gasoline tanks formerly located to the northwest of the diesel tanks that had a secondary containment with a heavily damaged bladder overlying native soils. The gasoline tanks were decommissioned in 2006 and removed prior to the 2008 field event. The soils that had been previously located beneath the secondary containment were pushed into stockpiles. The stockpiled soils as well as the graded soils were assessed, and no indications of petroleum releases were observed. An unknown quantity of impacted soils remain beneath the concrete pad of the tank farm and are not accessible for removal. The presence of these impacted soils may be contributing to the impacted groundwater quality in this area.

Monitoring Well, MW-12, which is located 30 feet northeast and downgradient of the tank farm, was sampled from 2005 to 2010. Since contamination was not evident during drilling in this area, this monitoring well was installed as a “sentry” well to evaluate potential future releases at the tank farm. Results from 2006 to 2007 had indicated that the hydrocarbon constituents increased during this period. The sample collected in 2008 indicated that the DRO concentration increased in 2008 as compared to the previous year, and was greater than the ADEC cleanup criterion. The sample collected in 2009 indicated that DRO concentrations decreased from 2008 to 2009 and the results were less than the ADEC cleanup criterion in 2009. During the latest sampling event, conducted in 2010, the water sample collected from Monitoring Well MW-12 exhibited non-detectable concentrations of contaminants below the laboratory’s MRLs and below ADEC cleanup criteria. Based on historical analytical results being below the ADEC cleanup criteria, Monitoring Well MW-12 was not sampled during 2013. However, if future petroleum spills occur from the tank farm area, the groundwater monitoring schedule for MW-12 may need to be re-evaluated to determine whether or it needs to be revised based on site-specific conditions. The historical analytical results from 2005 through 2010 for MW-12 are presented below in Table G.

Table G. Tank Farm Area Monitoring Well MW-12 Analytical Results 2005-2010

Parameter	2005 Results (mg/L)	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2010 Results (mg/L)	ADEC Cleanup Criteria ¹
Benzene	< 0.000500	0.000719	< 0.000500	< 0.000500	< 0.000500	< 0.000500	0.005
Toluene	< 0.002	0.000728 J	< 0.000500	< 0.000500	< 0.0010	< 0.000500	1.0
Ethylbenzene	< 0.002	0.000741 J	< 0.000500	< 0.000500	< 0.0010	< 0.000500	0.7
Total Xylenes	< 0.002	0.002350	< 0.00150	< 0.00150	< 0.0030	< 0.00150	10.0
GRO	< 0.090	0.0145 J	< 0.0500	< 0.0500	< 0.0500	< 0.0500	2.2
DRO	0.776	1.33	0.727	1.60	1.200	< 0.400	1.5
RRO	0.625	1.04	0.579	< 0.551	0.425	< 0.400	1.1

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345, Table C (dated April 8, 2012).

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics

J = sample results is estimated; mg/L = milligrams per liter

Analytical results that are **bold** exceed the ADEC cleanup criterion

7.4 Mechanics' Housing Area

Contaminated soils identified in 2005 were excavated in 2006 and 2007 from the Mechanics' Housing area. The source of the contamination was most likely a former aboveground storage tank (AST) that contained fuel. The contaminated soils that were accessible were excavated and land-farmed. The excavated area measured approximately 1,750 square feet.

It is estimated that approximately 150 cubic yards of impacted soils that could not be accessed remain in the following vicinities of the Mechanics' Housing area: the northeast portion of the excavation, underneath the Columbia Bunkhouse; in the southern portion of the excavation, towards a garage; and in the northwest portion of the excavation, towards another bunkhouse. Confirmation soil samples were collected to document the concentration of contaminants in these soils. The greatest contaminant concentrations are located underneath the Columbia Bunkhouse. Based on results from hand borings advanced in 2006, it is known that the lateral extent of contamination in the southeast area of the excavation does not extend beyond the Columbia Bunkhouse, and the contamination in the southern portion of the excavation does not extend south beyond the garage. It is also known that the impacted soils near the bunkhouse on the northwest side of the excavation, do not extend northwest beyond the bunkhouse.

The soils at approximately 9 feet to 10.5 feet below grade (bg), in the northeast portion of the

excavation, and presumably underneath the Columbia Bunkhouse, exhibited concentrations of DRO and benzene at 3,420 mg/Kg and 0.0963 mg/Kg, respectively; both of which exceeded ADEC cleanup criteria. The soils in the northwest portion of the excavation, and presumably underneath a bunkhouse, exhibited a DRO concentration slightly above the ADEC cleanup criterion at 388 mg/Kg. The soils in the southern portion of the excavation at a depth of 10.5 feet bg exhibited a DRO concentration of 485 mg/Kg which is above the ADEC cleanup criterion.

During 2008, Monitoring Well MW-17 was installed between the Mechanics' Bunkhouse and the Patricia Ann area. Contaminated soil encountered near the end of the 2008 field season in the area located northwest of the Mechanic's bunkhouse was thought to be associated with the former Patricia Ann release. Authorization from the ADEC was received during 2008 to excavate the impacted soils, but because of the lateness in the 2008 field season, a liner was placed in the excavation and backfilled with the native materials. This contamination was delineated and excavated during 2009 and approximately 40 cubic yards of impacted soil was removed from this area and placed in the WAFCO land-farm area. The base of the excavated area was approximately 150 square feet. The confirmation soil samples exhibited concentrations of BTEX, GRO, DRO, and RRO, that were below the laboratory's MRLs and the ADEC cleanup criteria.

During 2010, Monitoring Well MW-17 contained enough groundwater to collect a water sample, and therefore, was not replaced in accordance with an approved email request made to the ADEC Project Manager, Todd Blessing. Water Sample MW-17 exhibited non-detectable concentrations of contaminants below the laboratory's MRLs and below ADEC cleanup criteria. A water sample was not collected from Monitoring Well MW-17 during the 2013 field season because some type of obstruction was present in the well that prevented any equipment from being lowered to the bottom of the well for the collection of a water sample. It is recommended that the obstruction be removed from Monitoring Well MW-17, if possible, so that a groundwater sample can be collected from this well to evaluate groundwater conditions in this area. The historical analytical results from 2010 through 2013 are presented in Table H below.

Table H. Mechanics' Housing Area MW-17 Analytical Results 2010 – 2013

Parameter	2010 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹ (mg/L)
Benzene	<0.000500	NS	0.005
Toluene	<0.000500	NS	1.0
Ethylbenzene	<0.000500	NS	0.7
Total Xylenes	<0.00150	NS	10
GRO	<0.0500	NS	2.2
DRO	<0.388	NS	1.5
RRO	<0.388	NS	1.1

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345, Table C, dated October 1, 2014.

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics; mg/L = milligrams per liter; NS = not sampled

Analytical results that are **bold** exceeded the ADEC cleanup criterion.

Monitoring Well MW-16 is located side-gradient and upgradient of the remaining petroleum contamination at the Mechanics' Housing excavation area. Water Sample MW-16 and its Duplicate Sample MW-40 exhibited DRO concentrations that exceeded the ADEC cleanup criterion. In summary, water samples collected from MW-16 have exhibited generally decreasing trends from 2005 through 2013. We recommend that groundwater monitoring be continued for Monitoring Well MW-16 in the future, to continue to monitor the water quality trends in this area. The historical analytical results from 2006 through 2013 are presented graphically in Figures 6 and 7, and Table I below.

Table I. Mechanics' Housing Area MW-16 Analytical Results 2006 - 2013

Parameter	2006 Results (mg/L)	2007 Results (mg/L)	2008 Results (mg/L)	2009 Results (mg/L)	2013 Results (mg/L)	ADEC Cleanup Criteria ¹ (mg/L)
Benzene	0.180	0.0761	0.0191	0.0271	0.00174	0.005
Toluene	0.386	0.0439	0.000780	0.0035	<0.00100	1.0
Ethylbenzene	0.361	0.00567	< 0.000500	0.0116	<0.00100	0.7
Total Xylenes	1.818	0.196	0.00686	0.0384	0.00232	10
GRO	5.170	1.180	0.530	0.717	0.125	2.2
DRO	27.0	230	50.0	18.8	22.7	1.5
RRO	3.15	6.43	2.01	1.69	0.780	1.1

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345, Table C, dated October 1, 2014.

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics; mg/L = milligrams per liter
 Analytical results that are **bold** exceeded the ADEC cleanup criterion.

8.0 EXCLUSIONS, CONSIDERATIONS AND QUALIFICATIONS

This monitoring event included the collection and analysis of soil samples from the land-farm areas and groundwater samples from specific monitoring wells and piezometers for specific analytes. The results of this monitoring event only provide an evaluation of the conditions in the vicinity of the locations that were assessed and sampled, and only for the specific compounds analyzed, with additional inferences based on professional judgment. This report was prepared for our client, Icicle Seafoods. The scope of work and level of effort were agreed to by Icicle Seafoods. It is not intended for third parties to rely on the information provided in this report, except at their own risk. This report presents facts, observations, and inferences based on conditions observed during the period of our project activities, and only those conditions that were evaluated as part of our scope of work. Our conclusions and recommendations are based on our observations and the results of our research, and as such, rely on the accuracy of the information that was reviewed. In addition, changes to site conditions may have occurred since we completed our latest project activities. These changes may be from the actions of man or nature. Changes in regulations may also impact the interpretation of site conditions. BGES will not disclose our findings to any parties other than our client as listed above, and the ADEC, except as directed by our client, or as required by law.

The field work was completed by Katy Latimer and Joshua Barsis, Environmental Scientists of BGES. Both Ms. Latimer and Mr. Barsis are QPs as defined by the ADEC. Ms. Latimer has conducted numerous site characterization and remediation projects throughout Alaska, which have included the advancement of soil borings, collection of soil samples, excavation supervision, installation of monitoring wells, and performance of groundwater monitoring. Mr. Barsis has performed numerous site characterization and remediation projects throughout Alaska, which have included the advancement of soil borings, collection of soil samples, installation of monitoring wells, performance of groundwater monitoring, and excavation of contaminated soils. This report was prepared by Katy Latimer and Jayne Martin, Senior Environmental Scientist, of BGES. Ms. Martin is a QP as defined by the ADEC and has more than 25 years of environmental consulting experience. Ms. Martin has conducted and managed numerous site characterization and remediation efforts throughout Alaska and the lower 48 states, which have included field activities such as the advancement of soil borings, performance of groundwater monitoring, excavation supervision and soil sampling, and the installation of monitoring wells. The report was reviewed

by Robert N. Braunstein, Principal Geologist of BGES. Mr. Braunstein is thoroughly familiar with site conditions, since he completed the Phase I ESA during the 2005 season, and led the field team during the 2005 Phase II ESA. Mr. Braunstein, a Certified Professional Geologist, has over 30 years of professional geologic and environmental consulting experience, and has conducted or managed thousands of Phase I and Phase II ESAs throughout Alaska and the lower 48 states. He has extensive experience with contaminated site assessments and remediation programs.

Prepared By:

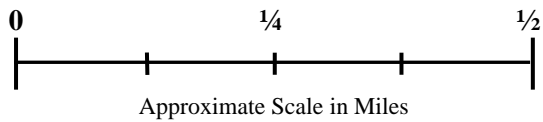
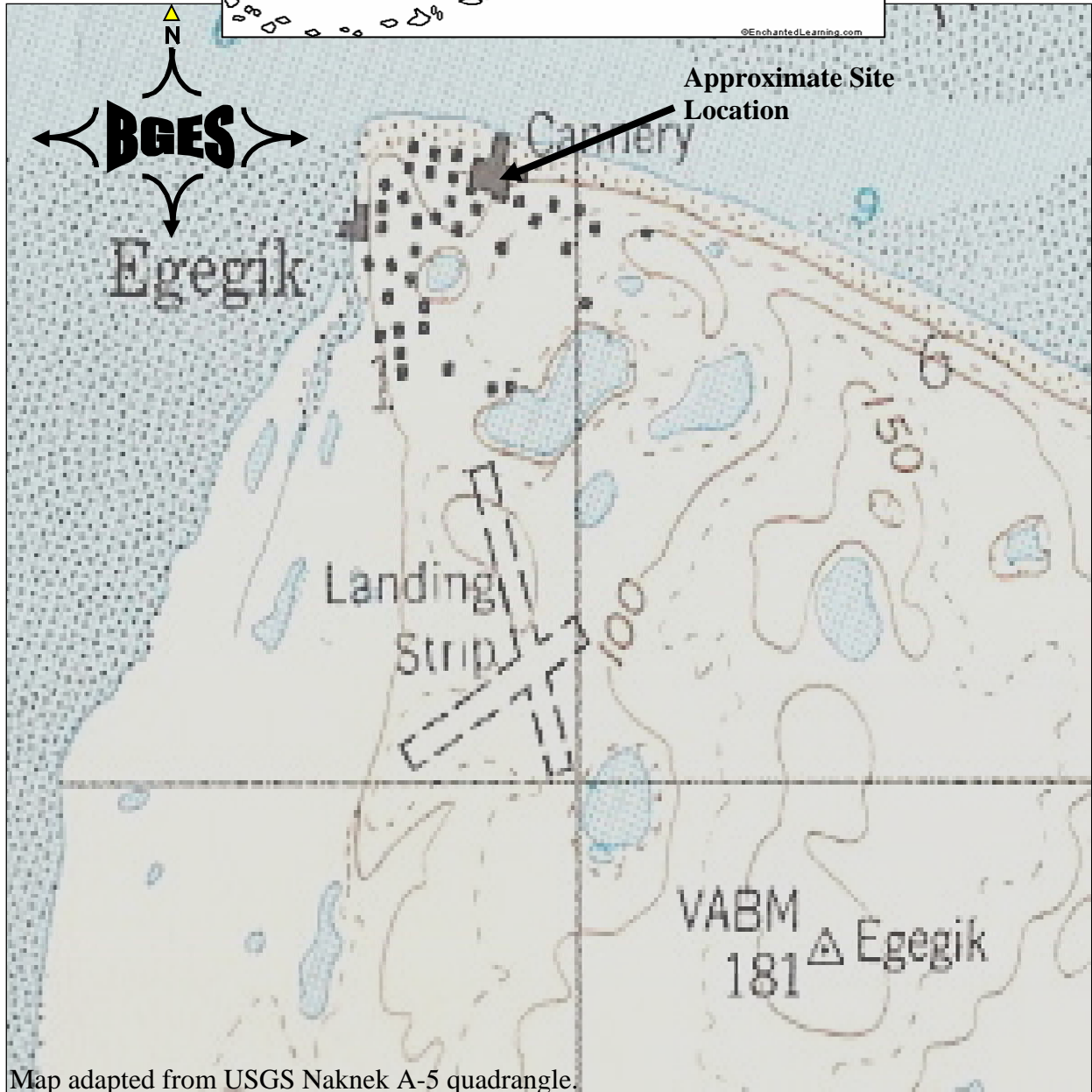
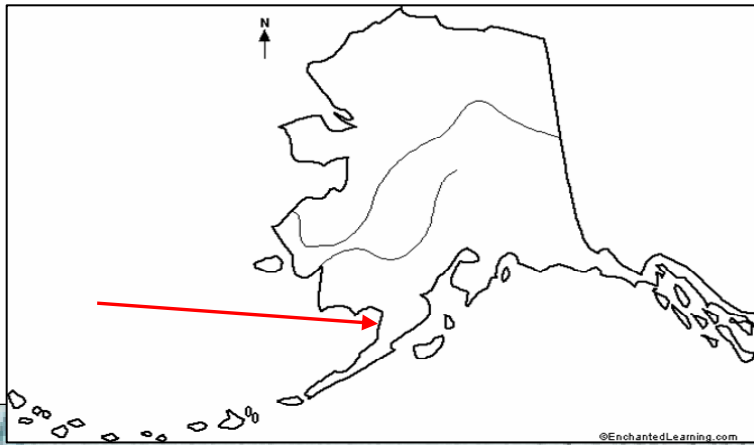


Jayne Martin
Senior Environmental Scientist

Reviewed and Approved By:



Robert N. Braunstein, C.P.G.
Principal

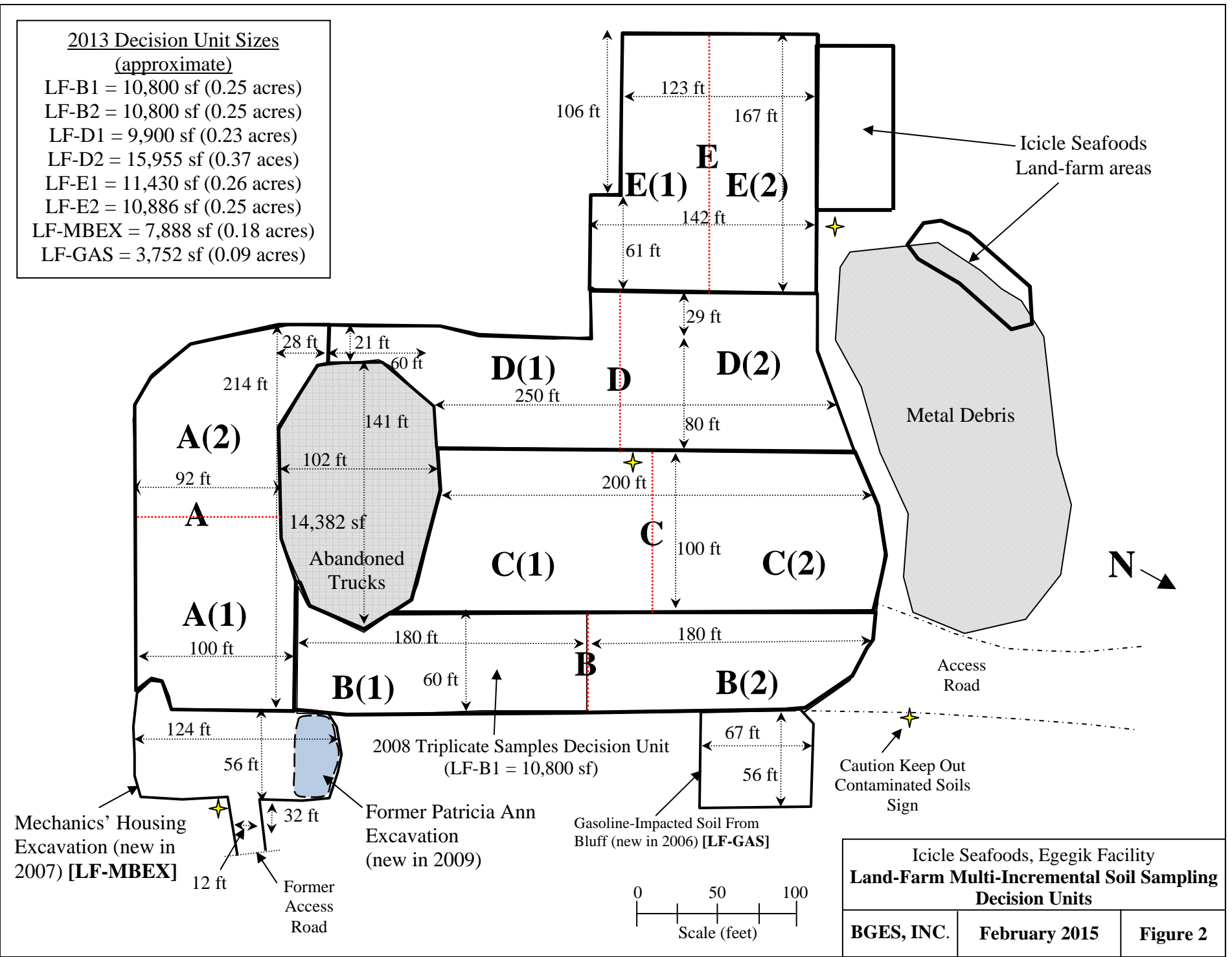


Icicle Seafoods, Egegik Facility Property Vicinity Map		
BGES, INC.	February 2015	Figure 1

2013 Decision Unit Sizes

(approximate)

- LF-B1 = 10,800 sf (0.25 acres)
- LF-B2 = 10,800 sf (0.25 acres)
- LF-D1 = 9,900 sf (0.23 acres)
- LF-D2 = 15,955 sf (0.37 acres)
- LF-E1 = 11,430 sf (0.26 acres)
- LF-E2 = 10,886 sf (0.25 acres)
- LF-MBEX = 7,888 sf (0.18 acres)
- LF-GAS = 3,752 sf (0.09 acres)

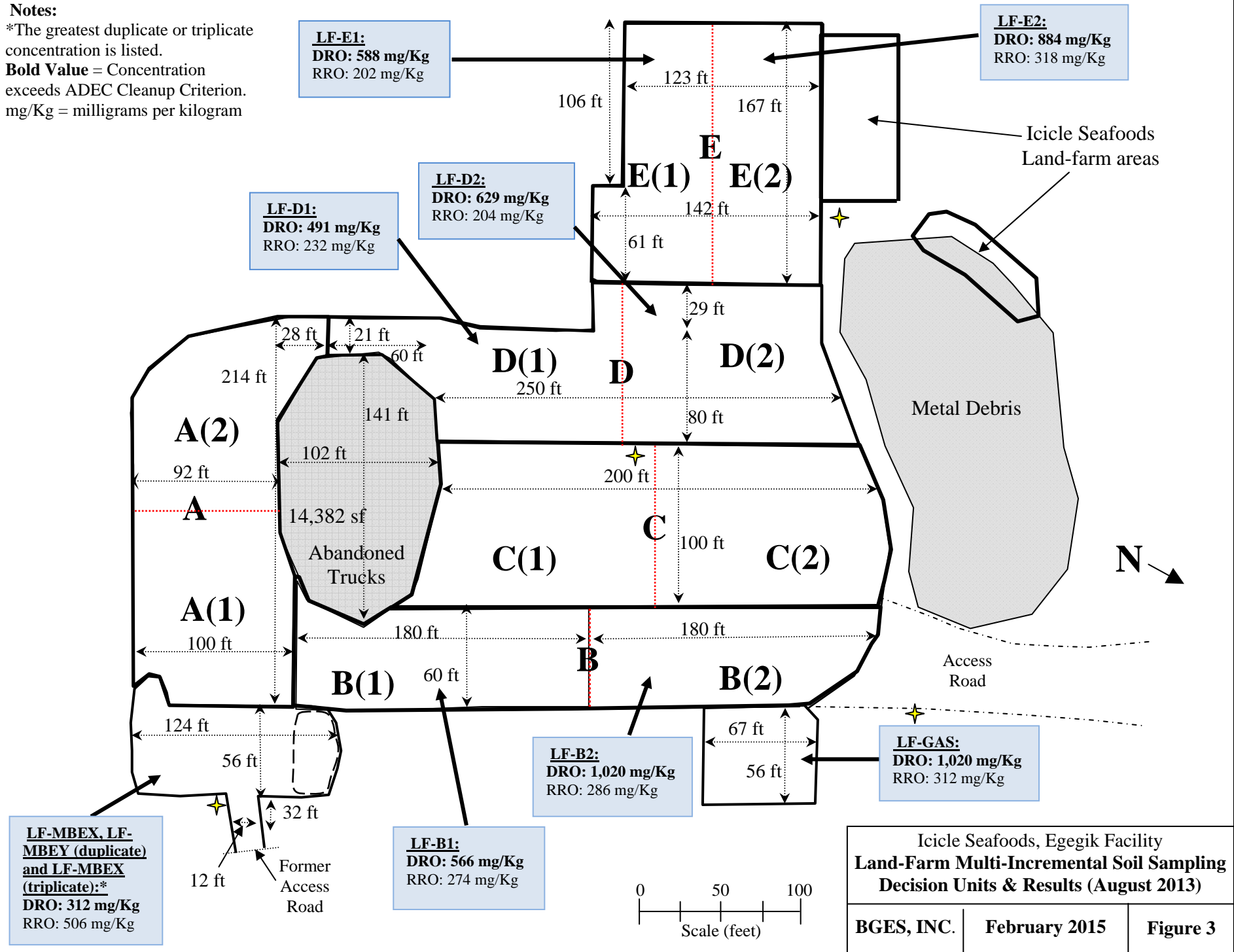


Iccle Seafoods, Egegik Facility
**Land-Farm Multi-Incremental Soil Sampling
 Decision Units**

Notes:

*The greatest duplicate or triplicate concentration is listed.

Bold Value = Concentration exceeds ADEC Cleanup Criterion.
mg/Kg = milligrams per kilogram

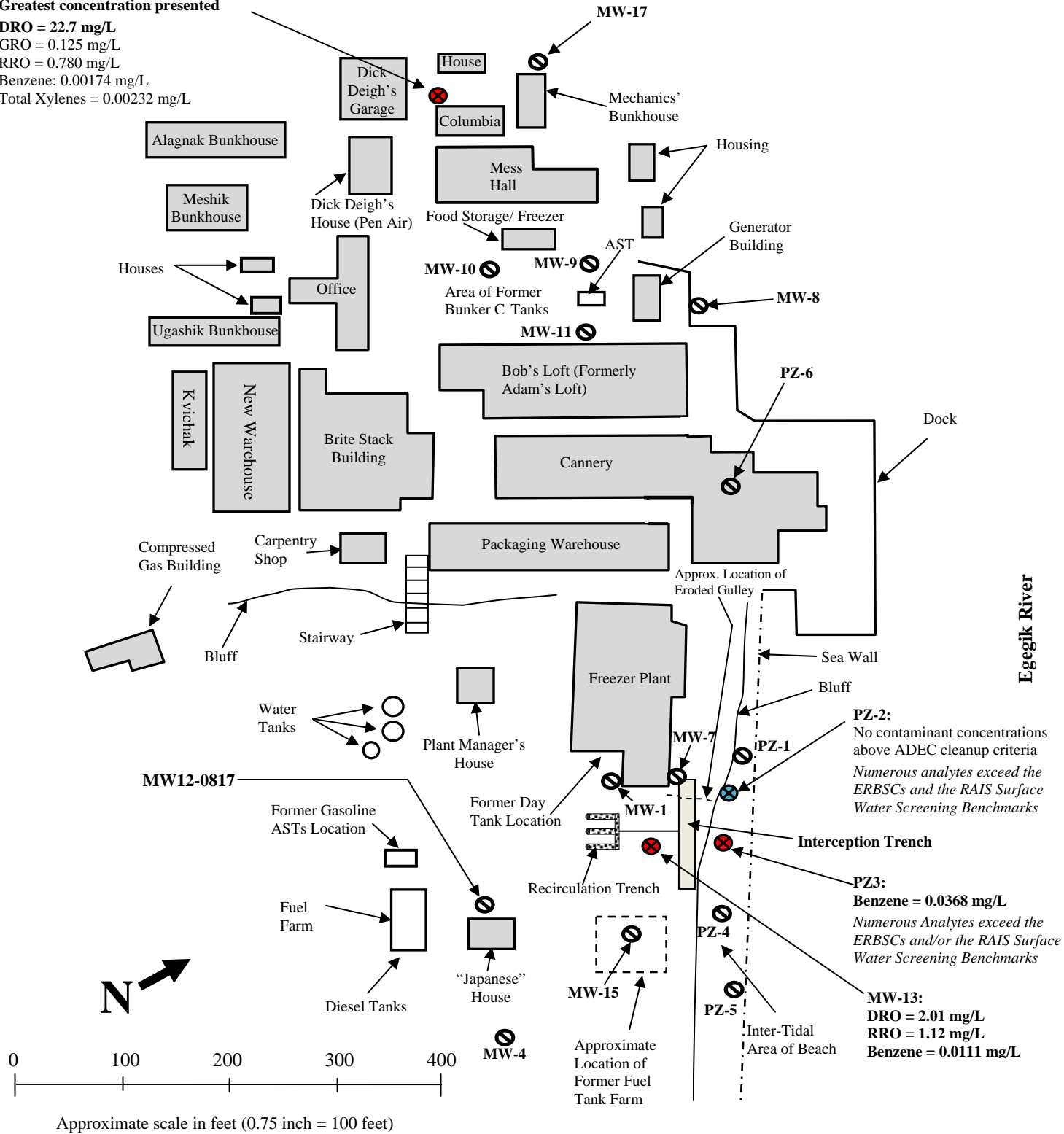


Icicle Seafoods, Egegik Facility
**Land-Farm Multi-Incremental Soil Sampling
 Decision Units & Results (August 2013)**

BGES, INC.	February 2015	Figure 3
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**MW-16 and MW-40 (duplicate of MW16):
Greatest concentration presented**

DRO = 22.7 mg/L
GRO = 0.125 mg/L
RRO = 0.780 mg/L
Benzene: 0.00174 mg/L
Total Xylenes = 0.00232 mg/L



PZ-2:
 No contaminant concentrations above ADEC cleanup criteria
Numerous analytes exceed the ERBSCs and the RAIS Surface Water Screening Benchmarks

PZ3:
Benzene = 0.0368 mg/L
Numerous Analytes exceed the ERBSCs and/or the RAIS Surface Water Screening Benchmarks

MW-13:
DRO = 2.01 mg/L
RRO = 1.12 mg/L
Benzene = 0.0111 mg/L

Legend:

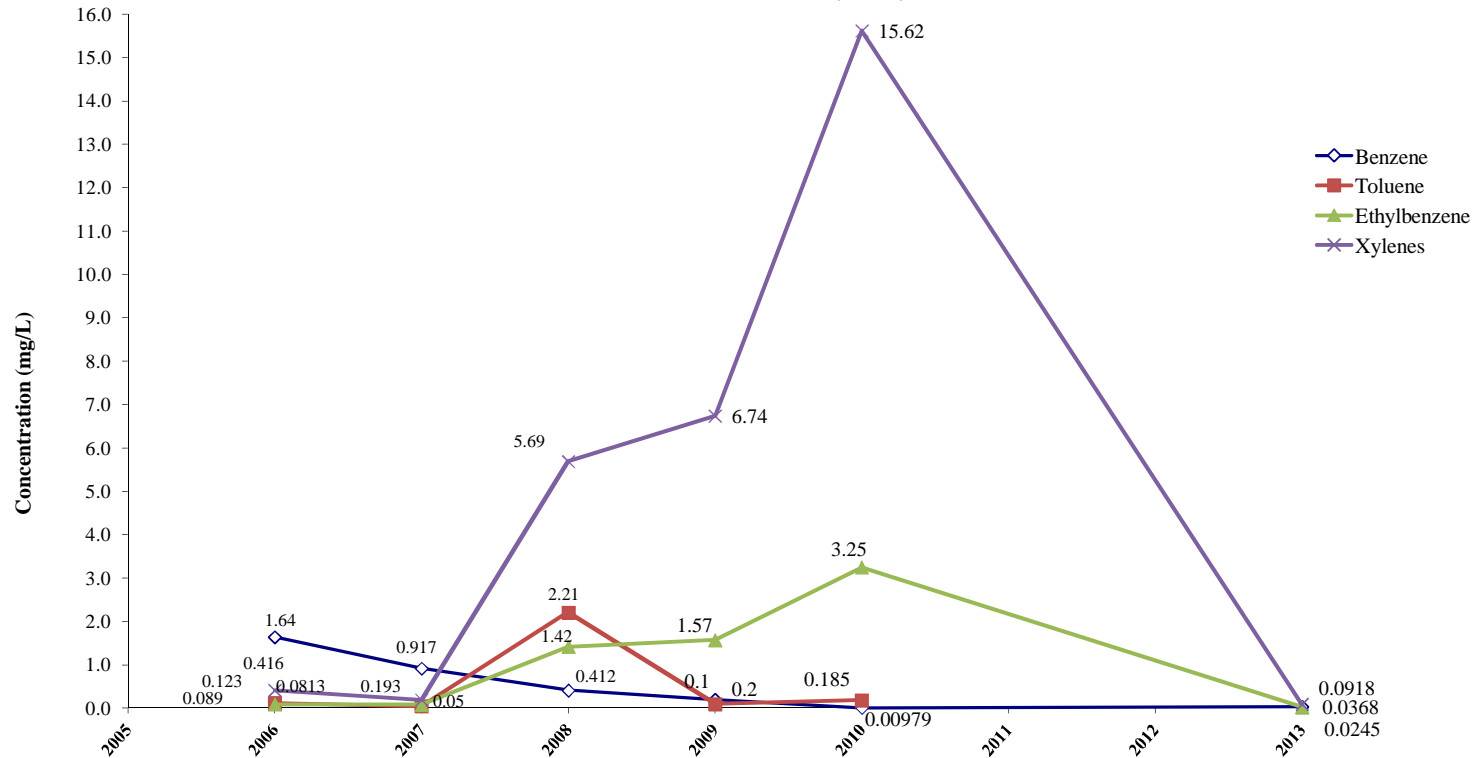
- ⊖ = Well/Piezometer not sampled during 2013 Field Season
- ⊗ = Well/Piezometer Location (concentration did not exceed ADEC Cleanup Criteria)
- ⊗ (with red center) = Well/Piezometer Location (concentration exceeds ADEC Cleanup Criteria)

mg/L = milligrams per liter
 ERBSC = Ecological Risk-Based Screening Concentration

Note: Map adapted from June 17, 2002 Aeromap aerial photograph

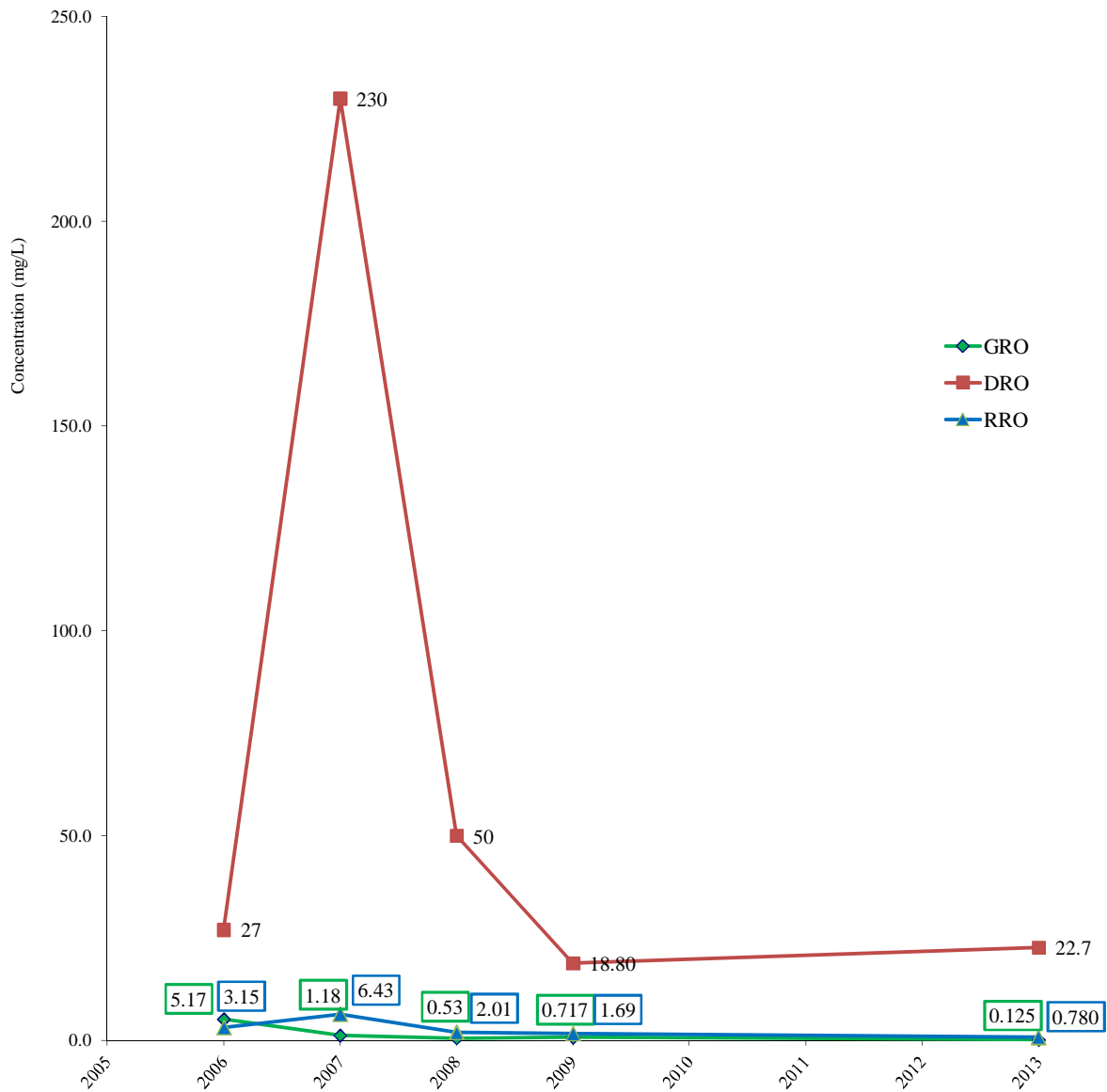
**Icicle Seafoods, Egegik Facility
 Egegik, Alaska
 Groundwater Monitoring Well/Piezometer
 Locations & Results (August 2013)**

FIGURE 5
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
HISTORICAL ANALYTICAL RESULTS FOR PIEZOMETER PZ-3 (BTEX)



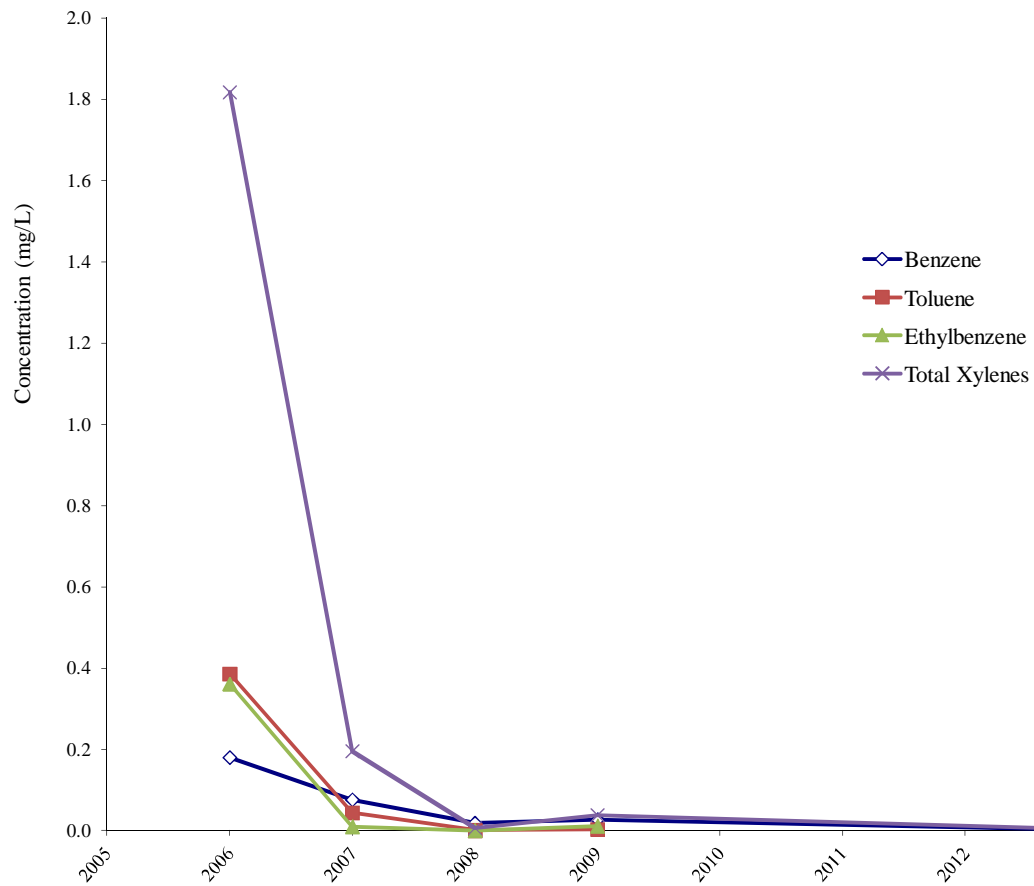
* The method reporting limits were used for those results that were not detected above the method reporting limits. Only analytes with historic contamination above ADEC cleanup levels were listed. The greatest results from the duplicate samples obtained each year were used to plot the above graph. The method reporting limits were used for those results that were not detected above the method reporting limits.

FIGURE 6
ICICLE SEAFOODS, EGEKIK FACILITY,
EGEKIK, ALASKA
HISTORICAL ANALYTICAL RESULTS FOR
MONITORING WELL MW-16 (GRO, DRO, AND RRO)



Only analytes with historic contamination above ADEC cleanup levels were listed.
 DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics
 The greatest results from the duplicate samples obtained each year were used to plot the above graph.

FIGURE 7
ICICLE SEAFOODS, EGEKIK FACILITY
EGEKIK, ALASKA
HISTORICAL ANALYTICAL RESULTS FOR MONITORING WELL MW-16 (BTEX)



Only analytes with historic contamination above ADEC cleanup levels were listed.
 The greatest results from the duplicate samples obtained each year were used to plot the above graph.
 The method reporting limits were used for those results that were not detected above the method reporting limits.

TABLE 1
ICICLE SEAFOODS, EGEGIK FACILITY, EGEGIK, ALASKA
ANALYTICAL RESULTS - SOIL SAMPLES (AUGUST 2013)

Soil Sample No.	Parameter	Results (mg/Kg)	LOQ (mg/Kg)	ADEC Cleanup	
				Criteria (mg/Kg) ¹	Analytical Method
LF-D1 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.23 acre)	DRO	491	21.6	250	AK102
	RRO	232	21.6	10,000	AK103
LF-D2 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.37 acre)	DRO	629	20.7	250	AK102
	RRO	204	20.7	10,000	AK103
LF-E1 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.26 acre)	DRO	588	20.9	250	AK102
	RRO	202	20.9	10,000	AK103
LF-E2 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.25 acre)	DRO	884	83.8	250	AK102
	RRO	318	20.9	10,000	AK103
LF-B1 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.25 acre)	DRO	566	21.8	250	AK102
	RRO	274	21.8	10,000	AK103
LF-B2 PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.25 acre)	DRO	1,020	85.5	250	AK102
	RRO	286	21.4	10,000	AK103
LF-GAS PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.09 acre)	GRO	ND	3.18	300	AK101
	DRO	1,020	83.8	250	AK102
	RRO	312	20.9	10,000	AK103
	Benzene	ND	0.0159	0.025	SW 8021B
	Toluene	ND	0.0318	6.5	SW 8021B
	Ethylbenzene	ND	0.0318	6.9	SW 8021B
LF-MBEX PID = 0 ppm Depth = 3 - 12 inches (Approx. Size = 0.18 acre)	Xylenes (Total)	ND	0.0954	63	SW 8021B
	GRO	ND	2.94	300	AK101
	DRO	281	20.8	250	AK102
	RRO	283	20.8	10,000	AK103
	Benzene	ND	0.0147	0.025	SW 8021B
	Toluene	ND	0.0294	6.5	SW 8021B
Ethylbenzene	ND	0.0294	6.9	SW 8021B	
Xylenes (Total)	ND	0.0881	63	SW 8021B	

TABLE 1
ICICLE SEAFOODS, EGEGIK FACILITY, EGEGIK, ALASKA
ANALYTICAL RESULTS - SOIL SAMPLES (AUGUST 2013)

Soil Sample No.	Parameter	Results (mg/Kg)	LOQ (mg/Kg)	ADEC Cleanup	
				Criteria (mg/Kg) ¹	Analytical Method
LF-MBEY					
(Duplicate of LF-MBEX)	GRO	ND	2.69	300	AK101
	DRO	182	21.2	250	AK102
	RRO	385	21.2	10,000	AK103
	Benzene	ND	0.0134	0.025	SW 8021B
	Toluene	ND	0.0269	6.5	SW 8021B
	Ethylbenzene	ND	0.0269	6.9	SW 8021B
	Xylenes (Total)	ND	0.0807	63	SW 8021B
LF-MBEZ					
(Triplicate of LF-MBEX)	GRO	ND	3.42	300	AK101
	DRO	312	21.6	250	AK102
	RRO	506	21.6	10,000	AK103
	Benzene	ND	0.0171	0.025	SW 8021B
	Toluene	ND	0.0342	6.5	SW 8021B
	Ethylbenzene	ND	0.0342	6.9	SW 8021B
	Xylenes (Total)	ND	0.1027	63	SW 8021B
¹ Cleanup criteria from most stringent criteria in ADEC 18 AAC 75.341, Tables B1 and B2, Method 2, under 40-inch zone, revised October 1, 2014. ADEC = Alaska Department of Environmental Conservation; PID = photoionization detector; ND = non-detectable; GRO = gasoline range organics; DRO = diesel range organics; RRO = residual range organics; LOQ = limit of quantitation; AK = Alaska Method; ppm = parts per million; mg/Kg = milligrams per kilogram BOLD = Concentration exceeds the applicable ADEC cleanup criterion.					

TABLE 2
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
MONITORING WELL SAMPLING DATA (AUGUST 2013)

BGES, INC.

Well Number	MW-1	MW-04	MW-07	MW-08	MW-09	MW-10
Date Sampled	—	—	—	—	—	—
Date of Depth and Elevation Measurement	08/11/13	08/11/13	—	08/11/13	08/11/13	08/11/13
Time of Depth to Water Measurement	19:30	20:10	—	19:20	19:05	19:00
Time Sample Collected	NS	NS	NS	NS	NS	NS
Top of Casing Elevation (feet)	101.60	112.71	—	96.53	100.69	—
Depth to Water (feet below top of casing)	6.50	7.60	—	23.40	5.20	4.70
Water Elevation (feet)	*	*	—	73.13	*	—
Total Depth of Well (feet below top of casing)	20.30	16.20	—	28.00	9.80	5.30
Ground Elevation	—	—	—	—	—	—
Depth to Water (feet below top of ground surface)	—	—	—	—	—	—
Well Casing Diameter (Inches)	2	2	—	1	2	2
Standing Water Well Volume (gallons)	—	—	—	—	—	—
Purge Volume-Actual (gallons)	—	—	—	—	—	—
Temperature (degrees Celsius)	—	—	—	—	—	—
pH (standard units)	—	—	—	—	—	—
Conductivity (millisiemens per centimeter)	—	—	—	—	—	—
Total Dissolved Solids (parts per million)	—	—	—	—	—	—
Notes: Samplers: J. Barsis & K. Latimer Field parameters measured with a YSI water quality meter. Weather conditions on August 12, 2013 were clear skies with an ambient temperature of 75 degrees Fahrenheit.	frost heaving. Lock was cut from locking well cap. Removed approx. 6-inches from the casing and secured locking cap with zip tie. * = not calculated because the top of casing has changed.	Locking well cap was missing. A new locking well cap was installed. The well had been damaged by frost heaving. Removed approx. 2-inches from the casing and secured locking well cap with a zip tie. * = not calculated because the top of casing has changed.	This well could not be located.	Lock was cut from the locking well cap and secured with a zip tie.	Well damaged by frost heaving. Lock was cut from the locking cover. The well did not have a locking well cap. A new well cap was installed. Approx. 2-inches was removed from the casing and the well was secured with a zip tie. * = not calculated because the top of casing has changed.	Lock was cut from the locking cover. The well did not have a locking well cap. A new well cap was installed and secured with a zip tie.

TABLE 2
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
MONITORING WELL SAMPLING DATA (AUGUST 2013)

BGES, INC.

Well Number	MW-11	MW-12	MW-13	MW-15	MW-16	MW-17
Date Sampled	—	—	08/12/13	—	08/12/13	—
Date of Depth and Elevation Measurement	08/11/13	08/11/13	08/12/13	08/11/13	08/12/13	08/11/13
Time of Depth to Water Measurement	19:10	—	9:00	20:00	13:30	18:55
Time Sample Collected	NS	NS	16:30	NS	14:30	NS
Top of Casing Elevation (feet)	97.68	—	91.68	—	—	—
Depth to Water (feet below top of casing)	4.00	18.10	13.10	32.1	11.70	15.60
Water Elevation (feet)	93.68	—	78.58	—	—	—
Total Depth of Well (feet below top of casing)	10.90	19.30	16.00	32.9	12.60	15.80
Ground Elevation	—	—	—	—	—	—
Depth to Water (feet below top of ground surface)	—	—	—	—	—	—
Well Casing Diameter (Inches)	2	2	2	2	2	2
Standing Water Well Volume (gallons)	—	—	0.47	—	0.15	—
Purge Volume-Actual (gallons)	—	—	1.50	—	0.5	—
Temperature (degrees Celsius)	—	—	9.0/8.9/9.0	—	18.2/18.0/18.0	—
pH (standard units)	—	—	10.38/10.29/10.35	—	8.6/8.5/8.6	—
Conductivity (millisiemens per centimeter)	—	—	23450/22761/23004	—	63.1/68.9/60.4	—
Oxidation Reduction Potential	—	—	164.5/148.3/147.0	—	197.1/203.2/211.0	—
Notes: Samplers: J. Barsis & K. Latimer Field parameters measured with a YSI Professional Pro water quality meter. Weather conditions on August 12, 2013 were clear skies with an ambient temperature of 75 degrees Fahrenheit.	The lock was cut from the locking cap and secured with a zip tie.	Well damaged by frost heaving. The well did not have a locking cap. Approx. 3-inches was removed from the top of casing. A new well cap was installed and secured with a zip tie.	Water was relatively free of sediment during sample collection.		Water was relatively free of sediment during sample collection. Initially there was not enough water to reach the bladder pump intake, the water sample was collected after other because of slow recharge. The well did not have a locking cap. A new cap was installed and secured with a zip tie.	Only a minor amount of water present in well. Not enough water to purge and collect a sample. Additionally, an unidentified object on a string was attached to the inside of the well and obstructed the bladder pump from reaching the bottom of the well. The locking cap was secured with a zip tie.

TABLE 2
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
MONITORING WELL SAMPLING DATA (AUGUST 2013)

BGES, INC.

Well Number	PZ-1	PZ-2	PZ-3	PZ-4	PZ-5	PZ-6
Date Sampled	—	08/12/13	08/12/13	—	—	—
Date of Depth and Elevation Measurement	—	08/12/13	08/12/13	08/11/13	—	—
Time of Depth to Water Measurement	—	18:20	17:50	18:10	—	—
Time Sample Collected	NS	18:30	18:00	NS	—	NS
Top of Casing Elevation (feet)	—	—	—	—	—	—
Depth to Water (feet below top of casing)	—	2.50	5.10	—	—	—
Water Elevation (feet)	—	—	—	—	—	—
Total Depth of Well (feet below top of casing)	—	4.50	9.60	4.60	—	—
Ground Elevation	—	—	—	—	—	—
Depth to Water (feet below top of ground surface)	—	—	—	—	—	—
Well Casing Diameter (Inches)	2	2	1	1	—	1
Standing Water Well Volume (gallons)	—	0.33	0.08	—	—	—
Purge Volume-Actual (gallons)	—	—	—	—	—	—
Temperature (degrees Celsius)	—	—	—	—	—	—
pH (standard units)	—	—	—	—	—	—
Conductivity (millisiemens per centimeter)	—	—	—	—	—	—
Total Dissolved Solids (parts per million)	—	—	—	—	—	—
Notes: Samplers: J. Barsis & K. Latimer Field parameters measured with a YSI water quality meter. Weather conditions on August 12, 2013 were clear skies with an ambient temperature of 75 degrees Fahrenheit.	Piezometer was knocked over and filled with sand and likely damaged by frost heaving.	Piezometer had been knocked over and damaged by frost heaving. The piezometer was replaced with a 2-inch diameter PVC well screen, which was advanced to approximately 4.5 feet below grade. The replacement piezometer was positioned adjacent to the original PZ-2. The piezometer was developed with a bailer prior to collection of a water sample.	The piezometer did not have a locking cap. The 0.86-inch bladder pump would not fit inside the well casing. The water sample was collected with a bailer and the piezometer was not purged prior to sample collection.	The piezometer did not have a locking cap. A new locking cap was installed. The piezometer was had been damaged by frost heaving. No water was present in this piezometer.	This piezometer could not be located.	This piezometer was not accessed because of the lack of daylight.

TABLE 3
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
ANALYTICAL RESULTS - WATER SAMPLES (AUGUST 2013)

Water Sample No.	Parameter	Results (mg/L)	LOQ (mg/L)	ADEC Water	Freshwater	Surface Water	Analytical Method
				Cleanup Criterion (mg/L) ¹	ERBSC (mg/L) ²	Screening Benchmark Value (mg/L) ⁴	
MW13-0812	Gasoline Range Organics	ND	0.100	2.2	N/A	N/A	AK101
	Diesel Range Organics	2.01	0.600	1.5	N/A	N/A	AK102
	Residual Range Organics	1.12	0.500	1.1	N/A	N/A	AK103
	Benzene	0.0111	0.000500	0.005	0.0210	0.021 ^a	EPA 8021B
	Toluene	ND	0.00100	1.0	0.00200	0.002 ^b	EPA 8021B
	Ethylbenzene	ND	0.00100	0.7	0.00730	0.0073 ^c	EPA 8021B
	Xylenes (total)	ND	0.00200	10	0.0130	0.013 ^{b,c}	EPA 8021B
MW16-0812	Gasoline Range Organics	0.125	0.100	2.2	N/A	N/A	AK101
	Diesel Range Organics	20.3	0.625	1.5	N/A	N/A	AK102
	Residual Range Organics	0.674	0.521	1.1	N/A	N/A	AK103
	Benzene	0.00174	0.000500	0.005	0.0210	0.021 ^a	EPA 8021B
	Toluene	ND	0.00100	1.0	0.00200	0.002 ^b	EPA 8021B
	Ethylbenzene	ND	0.00100	0.7	0.00730	0.0073 ^c	EPA 8021B
	Xylenes (total)	0.00232	0.00200	10	0.0130	0.013 ^{b,c}	EPA 8021B
MW40-0812 (Duplicate of MW16-0812)	Gasoline Range Organics	ND	0.100	2.2	N/A	N/A	AK101
	RPD = 11 % Diesel Range Organics	22.7	2.46	1.5	N/A	N/A	AK102
	RPD = 15 % Residual Range Organics	0.780	0.513	1.1	N/A	N/A	AK103
	RPD = 14 % Benzene	0.00151	0.000500	0.005	0.0130	0.021 ^a	EPA 8260B
	Toluene	ND	0.00100	1.0	0.00200	0.002 ^b	EPA 8260B
	Ethylbenzene	ND	0.00100	0.7	0.00730	0.0073 ^c	EPA 8260B
	Total Xylenes	ND	0.00200	10	0.0130	0.013 ^{b,c}	EPA 8260B
PZ2-0812	Fluoranthene	0.0000644	0.0000546	1.5	0.0000400	0.00004 ^b	EPA 8270 SIMS
	Fluorene	0.000109	0.0000546	1.5	0.00300	0.003 ^b	EPA 8270 SIMS
	Phenanthrene	0.0000673	0.0000546	11	0.000400	0.0004 ^b	EPA 8270 SIMS
	Pyrene	0.0000697	0.0000546	1.1	0.0000250	0.000025 ^b	EPA 8270 SIMS
	All Other PAHs	ND	Varies	Varies	Varies	Varies	EPA 8270 SIMS
	Benzene	ND	0.000400	0.005	0.0130	0.021 ^a	EPA 8260B
	Toluene	ND	0.00100	1.0	0.00200	0.002 ^b	EPA 8260B
	Ethylbenzene	ND	0.00100	0.7	0.00730	0.0073 ^c	EPA 8260B
	Total Xylenes	ND	0.00300	10	0.0130	0.013 ^{b,c}	EPA 8260B
	1,2,3-Trichloropropane	ND	0.00100	0.00012	N/A	N/A	EPA 8260B
	1,2-Dibromoethane	ND	0.00100	0.00005	N/A	N/A	EPA 8260B
	All Other VOCs	ND	Varies	Varies	Varies	Varies	EPA 8260B
	TAH*	ND	—	N/A	0.010 ³	N/A	BTEX sum
	TAQH**	0.0003104	—	N/A	0.015 ³	N/A	BTEX+8270m sum

TABLE 3
ICICLE SEAFOODS, EGEGIK FACILITY
EGEGIK, ALASKA
ANALYTICAL RESULTS - WATER SAMPLES (AUGUST 2013)

Water Sample No.	Parameter	Results (mg/L)	LOQ (mg/L)	ADEC Water Cleanup Criterion (mg/L) ¹	Freshwater ERBSC (mg/L) ²	Surface Water Screening Benchmark Value (mg/L) ⁴	Analytical Method
PZ3-0812	1-Methylnaphthalene	0.00205	0.000500	0.15	0.00210	0.0021 ^{b,c,d}	EPA 8270 SIMS
	2-Methylnaphthalene	0.000822	0.000500	0.15	N/A	0.0047 ^b	EPA 8270 SIMS
	Fluoranthene	0.000882	0.000500	1.5	0.000400	0.00004 ^b	EPA 8270 SIMS
	Fluorene	0.000606	0.000500	1.5	0.00300	0.003 ^b	EPA 8270 SIMS
	Naphthalene	0.00209	0.000100	0.73	0.001100	0.0011 ^b	EPA 8270 SIMS
	Phenanthrene	0.000157	0.000500	11	0.000400	0.0004 ^b	EPA 8270 SIMS
	Pyrene	0.000130	0.000500	1.1	0.0000250	0.000025 ^b	EPA 8270 SIMS
	All Other PAHs	ND	Varies	Varies	Varies	Varies	EPA 8270 SIMS
	1,2,4-Trimethylbenzene	0.368	0.0100	1.8	N/A	0.033 ^b	EPA 8260B
	1,3,5-Trimethylbenzene	0.202	0.0100	1.8	N/A	0.071 ^{b,d}	EPA 8260B
	4-Isopropyltoluene	0.0443	0.00100	N/A	N/A	N/A	EPA 8260B
	Benzene	0.0368	0.000400	0.005	0.0130	0.021 ^a	EPA 8260B
	Ethylbenzene	0.0245	0.00100	0.7	0.00730	0.0073 ^c	EPA 8260B
	Isopropylbenzene	0.0106	0.00100	3.7	N/A	N/A	EPA 8260B
	n-Propylbenzene	0.0119	0.00100	0.37	N/A	0.128 ^{b,d}	EPA 8260B
	Naphthalene	0.00585	0.00200	0.73	0.001100	0.0011 ^b	EPA 8260B
	sec-Butylbenzene	0.00203	0.00100	0.37	N/A	0.082 ^d	EPA 8260B
	tert-Butylbenzene	0.00211	0.00100	0.37	N/A	0.048 ^d	EPA 8260B
	Toluene	ND	0.00100	1.0	0.00200	0.002 ^b	EPA 8260B
	Total Xylenes	0.0918	0.00300	10	0.0130	0.013 ^{b,c}	EPA 8260B
	1,2,3-Trichloropropane	ND	0.00100	0.00012	N/A	N/A	EPA 8260B
	1,2-Dibromoethane	ND	0.00100	0.00005	N/A	N/A	EPA 8260B
	All Other VOCs	ND	Varies	Varies	Varies	Varies	EPA 8260B
TAH*	0.1531	—	N/A	0.010 ³	N/A	BTEX sum	
TAQH**	0.1590432	—	N/A	0.015 ³	N/A	BTEX+8270m sum	
Interception Trench	Iron	ND	1.000	N/A	N/A	N/A	EPA 6020

Notes:

¹ = Groundwater cleanup criteria based on 18 AAC 75.345 Table C (October 1, 2014).

² = Values obtained from ADEC Ecoscoping Guidance Manual, March 2009.

³ = Water quality criteria for TAH and TAQH based on 18 AAC 70.020 water quality standards for freshwater use (5)(A)(iii).

⁴ = Screening benchmark values were obtained from the Risk Assessment Information System (RAIS) Ecological Benchmark tool. There are multiple references listed for the surface water screening benchmark values obtained from the RAIS ecological benchmark tool because the most conservative benchmark values for fresh water environments for each parameter was selected for use in the comparison of the groundwater samples collected within the inter-tidal area of the beach of the Egegik River.

* = Total Aromatic Hydrocarbons (TAH) was calculated as the sum of benzene, toluene, ethylbenzene, and total xylenes (BTEX).

** = Total Aqueous Hydrocarbons (TAQH) was calculated as the sum of BTEX and the 8270m analytes.

^a = EC20 Fish Surface Water Screening Benchmark Values

^b = EPA, Region 3, Biological Technical Assistance Group Freshwater Screening Benchmark Values

^c = Tier II Secondary Chronic Value (SCV) Surface Water Screening Benchmark Values

^d = EPA, Region 6, Ecological Screening Benchmark Values for Freshwater

ADEC = Alaska Department of Environmental Conservation; ERBSC = Ecological Risk-Based Screening Concentration

DRO = diesel range organics; GRO = gasoline range organics; RRO = residual range organics;

VOCs = volatile organic compounds; PAHs = polynuclear aromatic hydrocarbons

LOQ = limit of quantitation; mg/L = milligrams per liter; N/A = No cleanup criteria/benchmark value listed

— The LOQs for the individual parameters are listed above.

BOLD = Exceeds ADEC Cleanup Criterion

Bold Italics = Exceeds ADEC Cleanup criteria, the Freshwater ERBSC, and the Surface Water Screening Benchmark value, as applicable.

Italics = Exceeds both the Freshwater ERBSC and the Surface Water Screening Benchmark value.

Italics = LOQ exceeds the ADEC Cleanup criterion

underline & shaded grey = Exceeds the Surface Water Screening Benchmark

APPENDIX A
SITE PHOTOGRAPHS



Photo 1. Establishing Grid for MI Sampling of Land-Farm



Photo 2. Establishing Grid for MI Sampling of Land-Farm



Photo 3. Establishing Grid for MI Sampling of Land-Farm



Photo 4. Establishing Grid for MI Sampling of Land-Farm



Photo 5. Collecting MI Sample



Photo 6. Caution Sign for Land-Farm Areas

Icicle Seafoods, Egegik Facility
 Egegik, Alaska
Site Photographs

BGES, INC.

February 2015

Figure A-1



Photo 7. MW-13 Located in the Beach Area



Photo 8. Looking for MW-7



Photo 9. Unknown Blockage in MW-17



Photo 10. PZ-2 Before Replacement in 2013



Photo 11. Replacing PZ2, Inter-Tidal Area of Beach



Photo 12. PZ-3 Located in Inter-Tidal Area of Beach

Icicle Seafoods, Egegik Facility
 Egegik, Alaska
Site Photographs

BGES, INC.

February 2015

Figure A-2



Photo 13. Sheen/Seepage Observed Near Interception Trench



Photo 14. Interception Trench, Upgradient of Inter-Tidal Area



Photo 15. Out-of-Service 3,000-Gallon Aboveground Storage Tank Near Tank Farm

Icicle Seafoods, Egegik Facility
Egegik, Alaska
Site Photographs

BGES, INC.

February 2015

Figure A-3

APPENDIX B
FIELD NOTES AND
GROUNDWATER MONITORING LOGS

8-9-13 WAFco S. Barstis; N. Latimer

1420 BGES onsite to inspect monitoring wells & to collect water level measurements for the following wells:

Well	Time	DTW	TDW	Notes
MW7	1610	None	None	Not Located
MW13	1550	12.5'	15.9'	
PZ-2	1620	None	None	Knocked down
PZ-3	1600	4.7'	9.4'	
MW16	1520	11.9'	12.6'	Planned Duplicate
MW17	1530	None	None	No water
Interception Trench (IT)	1615	3.6'	4.7'	Pending from top of IT

High tide for Eggevik was at 1605.

MW17 had a string inside. Some object was attached to the bottom of the string & we were unable to remove the string. The water level meter did not touch water... possibly blocked by what was on the string.

8-9-13 WAFCO J. Bossi; K. Latimer

Monitoring Well Conditions

Well	Condition
Mw1	
Mw4	
Mw7	Not located (covered by metal plate?)
Mw13	Cut lock due to rust
Mw15	
PZ1	Knocked over; Filled w/ sand
PZ2	Knocked over; Screen frost heaved out of ground
PZ3	No cover, Frost Heaving
PZ4	No cover at all
PZ5	Not located
PZ6	
Mw12	
Mw8	
Mw9	
Mw10	
Mw11	
Mw16	Cut lock because of rust (Need new lock)
Mw17	Water level meter stepped at 12.8', however no water was encountered. String in well seemed to stop meter (Something attached to string?) Also, cut lock due to rust
JT1	Good

8-9-13 WAFCO J. Bossi; K. Latimer

1600 Ron (Icicle) indicated that the interception trench is working well. The pump is in good working order.

1815 Joe (Icicle) takes us to land farms to help us delineate the overgrown D's.

1915 Talked to Eugene... informed that we need DTW on all wells.

~~End 1915 JKL 8-9-13~~

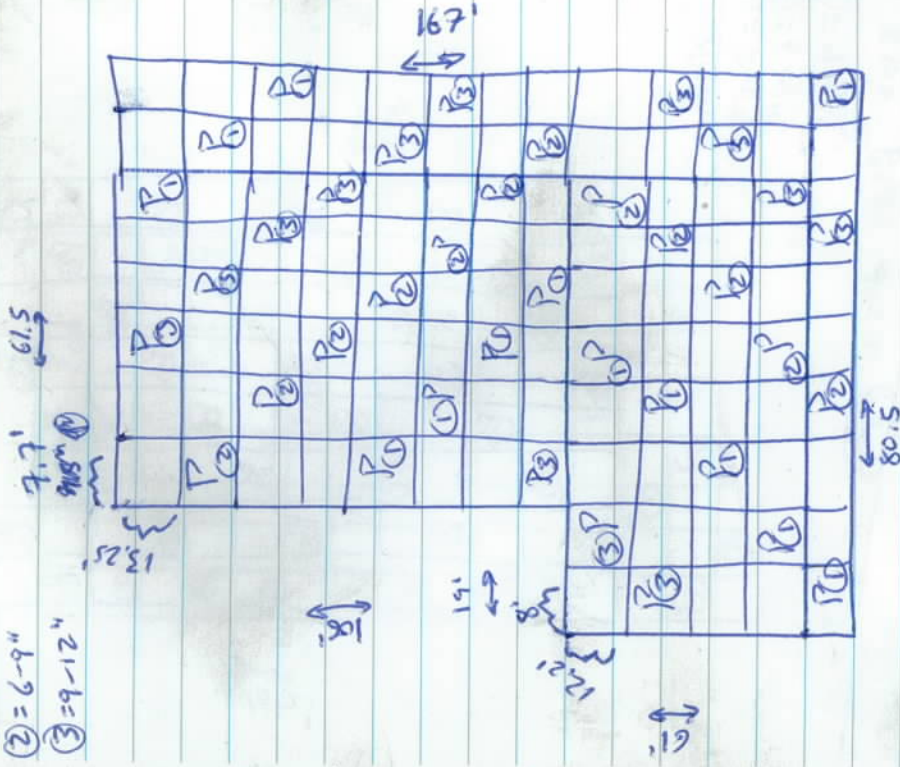
8-10-13 WAFEO J. BASSIS; K. LUTIME

1630 BGES onsite to conduct MI Sampling. A coin flip decided the random sampling order & depth.

The soils were not soft enough to push the probe to depths so a sludge hammer was used to pound the probe down when necessary

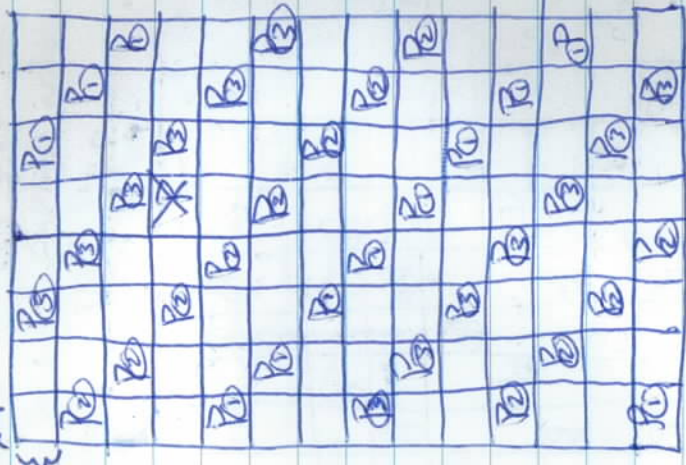
8-10-13 WAFEO J. BASSIS; K. LUTIME
LF-E1 Sample collection Time: 1830

- Depth
- ① = 3-6"
 - ② = 6-9"
 - ③ = 9-12"



8-10-13 J. Bussis, K. Lohmer WAFEO
LF-E2 Sample collection time: 2000

1.7' ←
61.5' ←



North →

Depth
 ① = 3-6"
 ② = 6-9"
 ③ = 9-12"

2100 BGFS OFFSITE ~~P2~~ 8-10-13

END

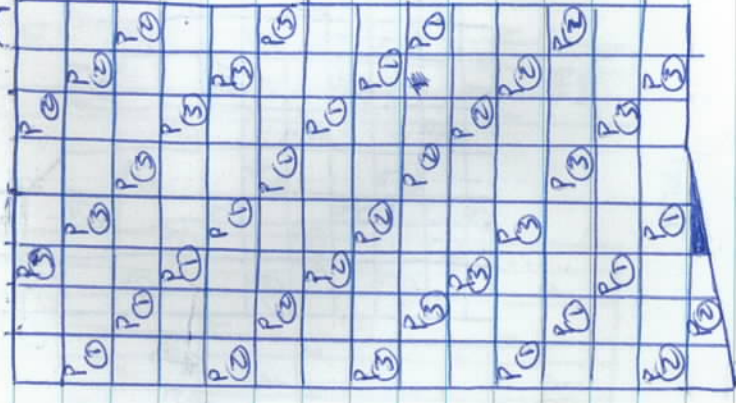
8-11-13 WAFEO S. Bussis, K. Lohmer

700 BGFS onsite to conduct MI Sampling

Sample collection time: 840

LF-D2

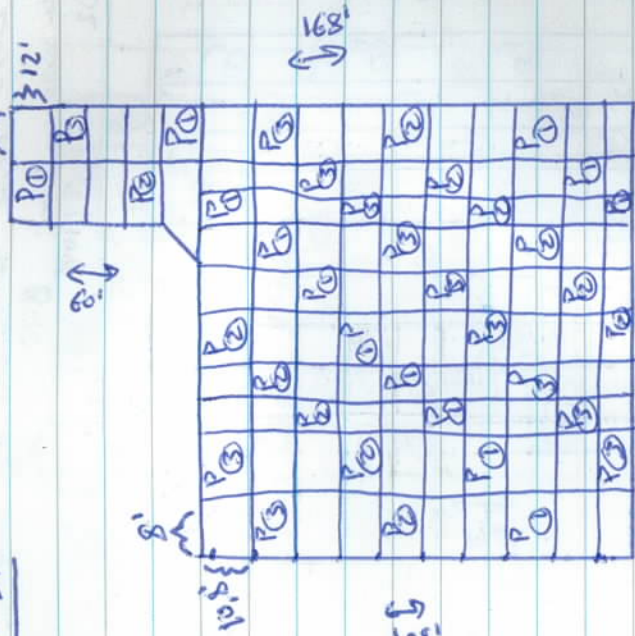
109' ←
13.6' ←



North ↓

Depth
 ① = 3-6"
 ② = 6-9"
 ③ = 9-12"

8-11-13 WAFco S. BARSIS; M. Latimer
 Sample collection time: 1000 Z^h 10.5^m
 LF- D1

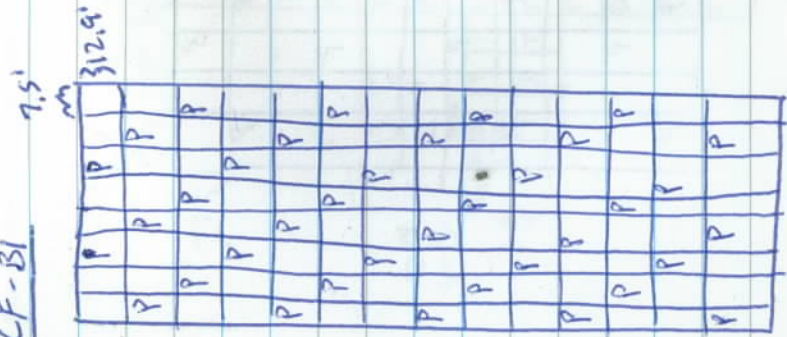


60'

North

- Depth
- ① = 3-6"
 - ② = 6-9"
 - ③ = 9-12"

8-11-13 WAFco S. BARSIS; M. Latimer
 Collection Time: 1200 & Collection time: 1330
 LF-B1 LF-B2



60' →

7.5'



60'

North

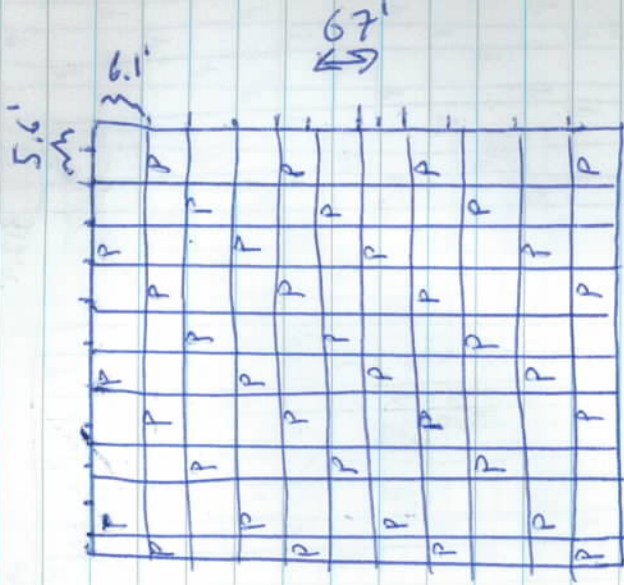
Depth

- ① = 3-6"
 - ② = 6-9"
 - ③ = 9-12"
- Both LF-B1 & B2 rotate depths from 2-1-3; in that order for every third aliquot.

8-11-13 WAFES J. BASS; K. LUTNER

LF-GAS

Collection time 1500



56'

North

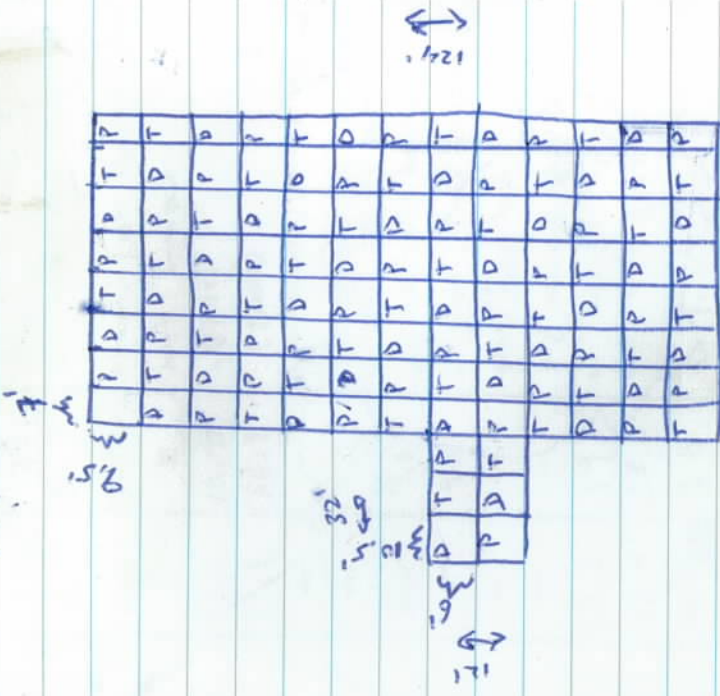
Depth
 ① = 3-6"
 ② = 6-9"
 ③ = 9-12"

-Depths range in order 2-3-1, for every third primary aliquot

8-11-13 S. BASS; K. LUTNER WAFES

LF-MBEX

Collection time 1730



North

56'

Depth
 ① = 3-6"
 ② = 6-9"
 ③ = 9-12"

-Depths range in order 3-1-2 for every third primary aliquot.

8-11-13 WAFEO J. Burris, K. Lettner
 Map of Metal debris in Land Firms

NOT MAPPED
 Trench

~~AA NEAR P22~~
~~8-11-13~~

8-11-13 WAFEO J. Burris, K. Lettner

Well water levels chart

Well	DTW	TDW	Notes (Time)
MW1	6.5'	20.3	Cut back; Frost Heaved up (1930)
MW4	7.6'	16.2'	No Lid; Frost heaved (2010)
MW7	-	-	Not Located
MW13	12.9'	15.9'	(P418)
MW15	32.1	32.9	(2000)
P21	-	-	Knocked over; Filled w/sand
P22	-	-	Knocked over; Screen Frost heaved out of ground
P23	5.0'	9.6'	No lid; Frost heaved (1955)
P24	-	4.6'	No Cover; Frost heaved; No
P25	-	-	Not Located
P26	-	-	No access this late
MW12	18.1'	19.3'	No Plug; Frost Heaved
MW8	23.4'	28.0'	Cut back (1920)
MW9	4.5'	7.8'	Cut back; Frost Heaving (195)
MW10	4.7'	5.3'	No Plug
MW11	4.0'	10.9'	Cut back; no Plug; (1900)
MW16	11.5'	12.6'	Cut back (1910)
MW17	15.6'	15.8'	No Plug (1850)
Interception Trench	3.4'	4.8'	Something on string (1855)

* High Tide was at 1815
 8-11-13
 2019

8-12-13 WAFEC S. Bassis, K. Latimer

700 BGFS onsite to conduct water sampling activities.

Well	DTW	TDW	Time	Notes
MW16	11.7'	12.6'		Not enough water to reach intake on bladder pump.

MW17 15.6' 15.8' Not enough water as described above & a string was attached to the inside of the well & had something on the bottom that wouldn't allow the bladder pump to go down.

PZ-2 - - Knocked down; frost heaved out of ground.

↳ see PZ-2 (new)

PZ-3 4.8 9.6' .86" bladder pump wouldn't fit in PZ-3; had to use a bailer; no purge required

8-12-13 WAFEC S. Bassis, K. Latimer

had to finish sampling after other wells because of slow recharge (Duplicate MW16)

Well	DTW	TDW	Time	Notes
MW16	11.7'	12.6'	1430	1400
MW13	13.1'	16.0'	1630	
PZ-3	5.1'	9.6'	1800	
PZ-2	~2.5'	~4.5'	1830	
Interception Trench			1830 1230	

Notes

PZ-2 was frost heaved & a sample could not be collected; therefore, a 2" wide & ~6' long well screen was advanced approx 4.5' by adjacent to the original PZ-2. A post hole digger was used to dig to the desired depth. The ~~same~~ well was developed using a bailer & also sampled from the ~~bottom~~ ^{pump (0.85")} at a later time during high tide.

PZ-3 was slightly frost heaved & the .85" bladder pump wouldn't fit in the well. A small bailer was used to collect the sample. The well was not purged.

8-12-13 WAFKO S. BASSIS; K. LUTIMER

Notes continued

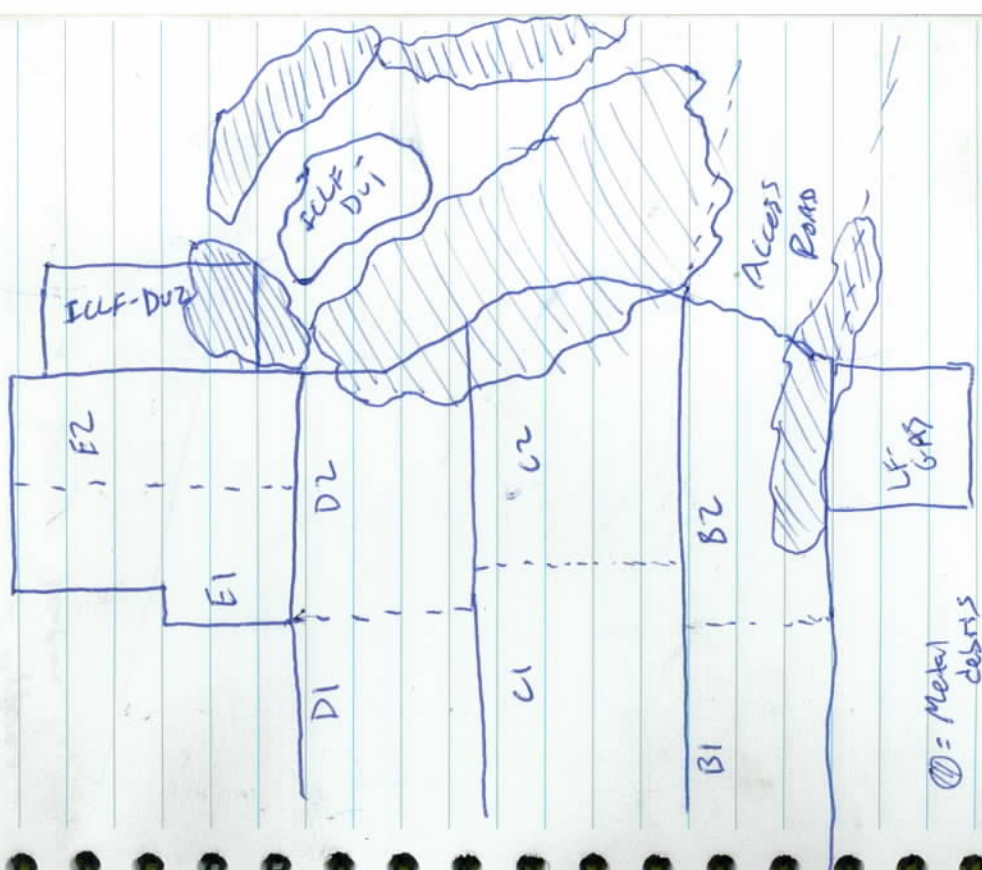
Mw16 was purged using a 5" x 10" x 0.85" bladder pump because the 1.25" one would not fit in the well.

Mw17 could not be located. Trenches were dug in the approximate area of the well; however, the well was not found. Ron (Teiche) also tried to find the well.

Well repair log

- Mw16 - Zip tied cap on
- Mw17 - Zip tied cap on
- Mw19 - Cut 2 inch casing; Zip tied cap
- Mw10 - Zip tied cap
- Mw11 - Zip tied cap
- Mw18 - Zip tied cap
- Mw13 - Zip tied cap
- Mw15 - Zip tied cap
- Mw14 - Cut 2" off casing; Zip tied cap
- Mw1 - Cut 6" off casing; Zip tied cap
- Mw12 - Cut 3" off casing; Zip tied cap

8-12-13 WAFKO S. BASSIS; K. LUTIMER

Map of Metal debris in land forms

8-12-13 WAFco J. Borsis, K. Lattimer

BGS inspects a 3,000 gallon (out of service) day tank. The tank was decommissioned, disconnected, & appeared to be in a different location.

~~8-12-13~~

~~End~~

GROUND WATER MONITORING LOG

BGES, INC.

Well Number: MWB

Time Arrived On Site: 900

Weather Conditions: clear blue Skies

Date of Depth to Water Measurement: 8-12-13

Time of Depth to Water Measurement: 900

Top of Casing Elevation: 91.68'
Depth to Water (feet below TOC): 13.1'
Water Elevation: 78.58'

Type of Sampling Equipment:
Bladder pump (1.75"); MPSO Controller
ISE Multi Meter; Under level indicator

Total Depth of Well (feet below TOC): 16.0
Depth to Water (feet below TOC): 13.1'
Water Column (feet): 2.9'

Volume of well (gals) 0.47 gallons

=0.1632 X Water Column (For 2-inch well)
=0.6528 X Water Column (For 4-inch well)
=1.4688 X Water Column (For 6-inch well)

Time Purging Began: 9:15 1590

Time of Sampling: 1630

Volume purged 1.5 gallons

PURGE A MINIMUM OF THREE WELL VOLUMES

pH 10.38
Conductivity 23450
ORP 164.5
Temperature 9.0°C

pH _____
Conductivity _____
ORP _____
Temperature _____

pH 10.29
Conductivity 22761
ORP 148.3
Temperature 8.9°C

pH _____
Conductivity _____
ORP _____
Temperature _____

pH 10.35
Conductivity 23004
ORP 147.0
Temperature 9.0°C

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Dissolved Oxygen _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Dissolved Oxygen _____
Temperature _____

Bladder Pump Intake Set to 14.1ft. Flow rate was approximately 150 mL/min

GROUND WATER MONITORING LOG

BGES, INC.

Well Number: MW16

Time Arrived On Site: 1330

Weather Conditions: Clear; 75°F

Date of Depth to Water Measurement: 8-12-13

Time of Depth to Water Measurement: 1330

Top of Casing Elevation:
Depth to Water (feet below TOC):
Water Elevation:

N/A
11.7'
N/A

Type of Sampling Equipment:
1.75" Bladder Pump; QED MP50 Controller;
YSE Multi-meter; Water level indicator

Total Depth of Well (feet below TOC):
Depth to Water (feet below TOC):
Water Column (feet):

12.6'
11.7'
0.9'

Volume of well (gals)

0.15

=0.1632 X Water Column (For 2-inch well)
=0.6528 X Water Column (For 4-inch well)
=1.4688 X Water Column (For 6-inch well)

Time Purging Began: 1330

Time of Sampling: 1430

Volume purged 0.5 gallon

PURGE A MINIMUM OF THREE WELL VOLUMES

pH 8.6
Conductivity 63.1
ORP 197.1
Temperature 18.2

pH _____
Conductivity _____
ORP _____
Temperature _____

pH 8.5
Conductivity 68.9
ORP 203.2
Temperature 18.0

pH _____
Conductivity _____
ORP _____
Temperature _____

pH 8.6
Conductivity 60.4
ORP 211
Temperature 18.0

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Dissolved Oxygen _____
Temperature _____

pH _____
Conductivity _____
ORP _____
Dissolved Oxygen _____
Temperature _____

Sampling began at 1430, however, the flow rate was slow so we had to
sample other wells during high tide. Sampling resumed at 1900 for this well.
The flow rate was less than 50ml/min. A 0.85" bladder pump was inserted
approximately 12' below the top of casing (intake level)

APPENDIX C
LABORATORY ANALYTICAL DATA

Laboratory Report of Analysis

To: BGES Inc.
1042 E 6th Ave
Anchorage, AK 99501
(907)644-2900

Report Number: **1133826**

Client Project: **WAFCO**

Dear Jayne Martin,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.



Victoria Pennick

2013.08.22

12:19:45 -08'00'

SGS North America Inc.
Environmental Services - Alaska Division
Project Manager

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Print Date: 08/21/2013 4:49:25PM

Case Narrative

SGS Client: **BGES Inc.**
SGS Project: **1133826**
Project Name/Site: **WAFCO**
Project Contact: **Jayne Martin**

Refer to sample receipt form for information on sample condition.

LF-E1 (1133826001) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-E2 (1133826002) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-D2 (1133826003) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-D1 (1133826004) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-B2 (1133826005) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-B1 (1133826006) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-GAS (1133826011) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-MBEX (1133826012) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-MBEY (1133826013) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

LF-MBEZ (1133826014) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

* Multi-Incremental (MI) preparation for DRO/RRO analyses was performed by SGS, Anchorage, Alaska.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
LF-E1	1133826001	08/10/2013	08/14/2013	Soil/Solid (dry weight)
LF-E2	1133826002	08/10/2013	08/14/2013	Soil/Solid (dry weight)
LF-D2	1133826003	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-D1	1133826004	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-B2	1133826005	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-B1	1133826006	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-GAS	1133826007	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEX	1133826008	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEY	1133826009	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEZ	1133826010	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-GAS	1133826011	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEX	1133826012	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEY	1133826013	08/11/2013	08/14/2013	Soil/Solid (dry weight)
LF-MBEZ	1133826014	08/11/2013	08/14/2013	Soil/Solid (dry weight)
TB1	1133826015	08/11/2013	08/14/2013	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
SM21 2540G	Percent Solids SM2540G

Detectable Results Summary

Client Sample ID: LF-E1			
Lab Sample ID: 1133826001			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	588	mg/Kg
	Residual Range Organics	202	mg/Kg
Client Sample ID: LF-E2			
Lab Sample ID: 1133826002			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	884	mg/Kg
	Residual Range Organics	318	mg/Kg
Client Sample ID: LF-D2			
Lab Sample ID: 1133826003			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	629	mg/Kg
	Residual Range Organics	204	mg/Kg
Client Sample ID: LF-D1			
Lab Sample ID: 1133826004			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	491	mg/Kg
	Residual Range Organics	232	mg/Kg
Client Sample ID: LF-B2			
Lab Sample ID: 1133826005			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	1020	mg/Kg
	Residual Range Organics	286	mg/Kg
Client Sample ID: LF-B1			
Lab Sample ID: 1133826006			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	566	mg/Kg
	Residual Range Organics	274	mg/Kg
Client Sample ID: LF-GAS			
Lab Sample ID: 1133826011			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	1020	mg/Kg
	Residual Range Organics	312	mg/Kg
Client Sample ID: LF-MBEX			
Lab Sample ID: 1133826012			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	281	mg/Kg
	Residual Range Organics	283	mg/Kg
Client Sample ID: LF-MBEY			
Lab Sample ID: 1133826013			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	182	mg/Kg
	Residual Range Organics	385	mg/Kg
Client Sample ID: LF-MBEZ			
Lab Sample ID: 1133826014			
Semivolatile Organic Fuels			
	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
	Diesel Range Organics	312	mg/Kg
	Residual Range Organics	506	mg/Kg

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Results of **LF-E1**

Client Sample ID: **LF-E1**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826001
Lab Project ID: 1133826

Collection Date: 08/10/13 18:30
Received Date: 08/14/13 16:35
Matrix: Soil/Solid (dry weight)
Solids (%): 95.6

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	588		20.9	6.48	mg/Kg	1	08/20/13 06:32
Surrogates							
5a Androstane	91.3		50-150		%	1	08/20/13 06:32

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 06:32
Container ID: 1133826001-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.044 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	202		20.9	6.48	mg/Kg	1	08/20/13 06:32
Surrogates							
n-Triacontane-d62	79.9		50-150		%	1	08/20/13 06:32

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 06:32
Container ID: 1133826001-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.044 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of **LF-E2**

Client Sample ID: **LF-E2**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826002
Lab Project ID: 1133826

Collection Date: 08/10/13 20:00
Received Date: 08/14/13 16:35
Matrix: Soil/Solid (dry weight)
Solids (%): 95.4

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	884		83.8	26.0	mg/Kg	4	08/21/13 02:22
Surrogates							
5a Androstane	88.5		50-150		%	4	08/21/13 02:22

Batch Information

Analytical Batch: XFC11025
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/21/13 02:22
Container ID: 1133826002-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.034 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	318		20.9	6.49	mg/Kg	1	08/20/13 06:52
Surrogates							
n-Triacontane-d62	83.4		50-150		%	1	08/20/13 06:52

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 06:52
Container ID: 1133826002-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.034 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-D2

Client Sample ID: **LF-D2**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826003
Lab Project ID: 1133826

Collection Date: 08/11/13 08:40
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 95.7

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	629		20.7	6.41	mg/Kg	1	08/20/13 07:13
Surrogates							
5a Androstane	78.9		50-150		%	1	08/20/13 07:13

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 07:13
Container ID: 1133826003-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.317 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	204		20.7	6.41	mg/Kg	1	08/20/13 07:13
Surrogates							
n-Triacontane-d62	79.4		50-150		%	1	08/20/13 07:13

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 07:13
Container ID: 1133826003-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.317 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-D1

Client Sample ID: **LF-D1**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826004
Lab Project ID: 1133826

Collection Date: 08/11/13 10:00
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 91.9

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	491		21.6	6.71	mg/Kg	1	08/20/13 07:32
Surrogates							
5a Androstane	92.2		50-150		%	1	08/20/13 07:32

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 07:32
Container ID: 1133826004-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.177 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	232		21.6	6.71	mg/Kg	1	08/20/13 07:32
Surrogates							
n-Triacontane-d62	85.7		50-150		%	1	08/20/13 07:32

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 07:32
Container ID: 1133826004-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.177 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-B2

Client Sample ID: **LF-B2**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826005
Lab Project ID: 1133826

Collection Date: 08/11/13 13:30
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 92.1

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	1020		85.5	26.5	mg/Kg	4	08/21/13 02:43
Surrogates							
5a Androstane	86.9		50-150		%	4	08/21/13 02:43

Batch Information

Analytical Batch: XFC11025
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/21/13 02:43
Container ID: 1133826005-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.472 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	286		21.4	6.63	mg/Kg	1	08/20/13 07:53
Surrogates							
n-Triacontane-d62	84.5		50-150		%	1	08/20/13 07:53

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 07:53
Container ID: 1133826005-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.472 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of **LF-B1**

Client Sample ID: **LF-B1**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826006
Lab Project ID: 1133826

Collection Date: 08/11/13 12:00
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 91.0

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	566		21.8	6.77	mg/Kg	1	08/20/13 08:13
Surrogates							
5a Androstane	89.7		50-150		%	1	08/20/13 08:13

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 08:13
Container ID: 1133826006-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.182 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	274		21.8	6.77	mg/Kg	1	08/20/13 08:13
Surrogates							
n-Triacontane-d62	88.5		50-150		%	1	08/20/13 08:13

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 08:13
Container ID: 1133826006-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.182 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-GAS

Client Sample ID: **LF-GAS**
 Client Project ID: **WAFCO**
 Lab Sample ID: 1133826007
 Lab Project ID: 1133826

Collection Date: 08/11/13 15:00
 Received Date: 08/14/13 16:48
 Matrix: Soil/Solid (dry weight)
 Solids (%): 78.3

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.18	U	3.18	0.954	mg/Kg	1	08/16/13 01:53

Surrogates

4-Bromofluorobenzene	68.1		50-150		%	1	08/16/13 01:53
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Batch Information

Analytical Batch: VFC11569
 Analytical Method: AK101
 Analyst: ST
 Analytical Date/Time: 08/16/13 01:53
 Container ID: 1133826007-B

Prep Batch: VXX25065
 Prep Method: SW5035A
 Prep Date/Time: 08/11/13 15:00
 Prep Initial Wt./Vol.: 88.916 g
 Prep Extract Vol: 44.2975 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	15.9	U	15.9	5.09	ug/Kg	1	08/16/13 01:53
Ethylbenzene	31.8	U	31.8	9.93	ug/Kg	1	08/16/13 01:53
o-Xylene	31.8	U	31.8	9.93	ug/Kg	1	08/16/13 01:53
P & M -Xylene	63.6	U	63.6	19.1	ug/Kg	1	08/16/13 01:53
Toluene	31.8	U	31.8	9.93	ug/Kg	1	08/16/13 01:53

Surrogates

1,4-Difluorobenzene	94.9		72-119		%	1	08/16/13 01:53
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Batch Information

Analytical Batch: VFC11569
 Analytical Method: SW8021B
 Analyst: ST
 Analytical Date/Time: 08/16/13 01:53
 Container ID: 1133826007-B

Prep Batch: VXX25065
 Prep Method: SW5035A
 Prep Date/Time: 08/11/13 15:00
 Prep Initial Wt./Vol.: 88.916 g
 Prep Extract Vol: 44.2975 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-MBEX

Client Sample ID: **LF-MBEX**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826008
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 80.4

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.94	U	2.94	0.881	mg/Kg	1	08/16/13 02:11
Surrogates							
4-Bromofluorobenzene	63.9		50-150		%	1	08/16/13 02:11

Batch Information

Analytical Batch: VFC11569
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 02:11
Container ID: 1133826008-B

Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 90.485 g
Prep Extract Vol: 42.7272 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	14.7	U	14.7	4.70	ug/Kg	1	08/16/13 02:11
Ethylbenzene	29.4	U	29.4	9.16	ug/Kg	1	08/16/13 02:11
o-Xylene	29.4	U	29.4	9.16	ug/Kg	1	08/16/13 02:11
P & M -Xylene	58.7	U	58.7	17.6	ug/Kg	1	08/16/13 02:11
Toluene	29.4	U	29.4	9.16	ug/Kg	1	08/16/13 02:11
Surrogates							
1,4-Difluorobenzene	95		72-119		%	1	08/16/13 02:11

Batch Information

Analytical Batch: VFC11569
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 02:11
Container ID: 1133826008-B

Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 90.485 g
Prep Extract Vol: 42.7272 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-MBEY

Client Sample ID: **LF-MBEY**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826009
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 83.8

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.69	U	2.69	0.807	mg/Kg	1	08/19/13 13:29
Surrogates							
4-Bromofluorobenzene	50.4		50-150		%	1	08/19/13 13:29

Batch Information

Analytical Batch: VFC11574
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/19/13 13:29
Container ID: 1133826009-B

Prep Batch: VXX25078
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 86.828 g
Prep Extract Vol: 39.1051 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	13.4	U	13.4	4.30	ug/Kg	1	08/19/13 13:29
Ethylbenzene	26.9	U	26.9	8.39	ug/Kg	1	08/19/13 13:29
o-Xylene	26.9	U	26.9	8.39	ug/Kg	1	08/19/13 13:29
P & M -Xylene	53.8	U	53.8	16.1	ug/Kg	1	08/19/13 13:29
Toluene	26.9	U	26.9	8.39	ug/Kg	1	08/19/13 13:29
Surrogates							
1,4-Difluorobenzene	95		72-119		%	1	08/19/13 13:29

Batch Information

Analytical Batch: VFC11574
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/19/13 13:29
Container ID: 1133826009-B

Prep Batch: VXX25078
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 86.828 g
Prep Extract Vol: 39.1051 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-MBEZ

Client Sample ID: **LF-MBEZ**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826010
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 16:48
Matrix: Soil/Solid (dry weight)
Solids (%): 78.8

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.42	U	3.42	1.03	mg/Kg	1	08/16/13 02:47

Surrogates

4-Bromofluorobenzene	61.7		50-150		%	1	08/16/13 02:47
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Batch Information

Analytical Batch: VFC11569
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 02:47
Container ID: 1133826010-B

Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 76.492 g
Prep Extract Vol: 41.246 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	17.1	U	17.1	5.48	ug/Kg	1	08/16/13 02:47
Ethylbenzene	34.2	U	34.2	10.7	ug/Kg	1	08/16/13 02:47
o-Xylene	34.2	U	34.2	10.7	ug/Kg	1	08/16/13 02:47
P & M -Xylene	68.5	U	68.5	20.5	ug/Kg	1	08/16/13 02:47
Toluene	34.2	U	34.2	10.7	ug/Kg	1	08/16/13 02:47

Surrogates

1,4-Difluorobenzene	95		72-119		%	1	08/16/13 02:47
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Batch Information

Analytical Batch: VFC11569
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 02:47
Container ID: 1133826010-B

Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 17:30
Prep Initial Wt./Vol.: 76.492 g
Prep Extract Vol: 41.246 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-GAS

Client Sample ID: **LF-GAS**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826011
Lab Project ID: 1133826

Collection Date: 08/11/13 15:00
Received Date: 08/14/13 09:59
Matrix: Soil/Solid (dry weight)
Solids (%): 94.1

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	1020		83.8	26.0	mg/Kg	4	08/21/13 03:03
Surrogates							
5a Androstane	86.2		50-150		%	4	08/21/13 03:03

Batch Information

Analytical Batch: XFC11025
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/21/13 03:03
Container ID: 1133826011-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.435 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	312		20.9	6.49	mg/Kg	1	08/20/13 08:34
Surrogates							
n-Triacontane-d62	83.4		50-150		%	1	08/20/13 08:34

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 08:34
Container ID: 1133826011-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.435 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-MBEX

Client Sample ID: **LF-MBEX**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826012
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 09:59
Matrix: Soil/Solid (dry weight)
Solids (%): 94.8

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	281		20.8	6.46	mg/Kg	1	08/20/13 08:54
Surrogates							
5a Androstane	86		50-150		%	1	08/20/13 08:54

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 08:54
Container ID: 1133826012-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.365 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	283		20.8	6.46	mg/Kg	1	08/20/13 08:54
Surrogates							
n-Triacontane-d62	86.4		50-150		%	1	08/20/13 08:54

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 08:54
Container ID: 1133826012-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.365 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of LF-MBEY

Client Sample ID: **LF-MBEY**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826013
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 09:59
Matrix: Soil/Solid (dry weight)
Solids (%): 93.7

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	182		21.2	6.58	mg/Kg	1	08/20/13 09:14
Surrogates							
5a Androstane	90.5		50-150		%	1	08/20/13 09:14

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 09:14
Container ID: 1133826013-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.151 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	385		21.2	6.58	mg/Kg	1	08/20/13 09:14
Surrogates							
n-Triacontane-d62	87.1		50-150		%	1	08/20/13 09:14

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 09:14
Container ID: 1133826013-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.151 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of **LF-MBEZ**

Client Sample ID: **LF-MBEZ**
Client Project ID: **WAFCO**
Lab Sample ID: 1133826014
Lab Project ID: 1133826

Collection Date: 08/11/13 17:30
Received Date: 08/14/13 09:59
Matrix: Soil/Solid (dry weight)
Solids (%): 92.3

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	312		21.6	6.70	mg/Kg	1	08/20/13 09:35
Surrogates							
5a Androstane	95.7		50-150		%	1	08/20/13 09:35

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/20/13 09:35
Container ID: 1133826014-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.099 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	506		21.6	6.70	mg/Kg	1	08/20/13 09:35
Surrogates							
n-Triacontane-d62	93.8		50-150		%	1	08/20/13 09:35

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/20/13 09:35
Container ID: 1133826014-B

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 08/19/13 10:00
Prep Initial Wt./Vol.: 30.099 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:28PM



Results of TB1

Client Sample ID: TB1
Client Project ID: WAFCO
Lab Sample ID: 1133826015
Lab Project ID: 1133826

Collection Date: 08/11/13 15:00
Received Date: 08/14/13 09:59
Matrix: Soil/Solid (dry weight)
Solids (%):

Results by Volatile Fuels

Table with 8 columns: Parameter, Result, Qual, LOQ/CL, DL, Units, DF, Date Analyzed. Rows include Gasoline Range Organics and Surrogates (4-Bromofluorobenzene).

Batch Information

Analytical Batch: VFC11569
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 00:39
Container ID: 1133826015-A
Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 15:00
Prep Initial Wt./Vol.: 49.741 g
Prep Extract Vol: 25 mL

Table with 8 columns: Parameter, Result, Qual, LOQ/CL, DL, Units, DF, Date Analyzed. Rows include Benzene, Ethylbenzene, o-Xylene, P & M -Xylene, Toluene, and Surrogates (1,4-Difluorobenzene).

Batch Information

Analytical Batch: VFC11569
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 00:39
Container ID: 1133826015-A
Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 08/11/13 15:00
Prep Initial Wt./Vol.: 49.741 g
Prep Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:28PM

Method Blank

Blank ID: MB for HBN 1475070 [SPT/9111]

Blank Lab ID: 1168873

QC for Samples:

1133826007, 1133826008, 1133826009, 1133826010

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9111

Analytical Method: SM21 2540G

Instrument:

Analyst: KRL

Analytical Date/Time: 8/15/2013 5:50:00PM

Print Date: 08/21/2013 4:49:30PM

Duplicate Sample Summary

Original Sample ID: 1133802001

Duplicate Sample ID: 1168874

QC for Samples:

1133826007, 1133826008, 1133826009, 1133826010

Analysis Date: 08/15/2013 17:50

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	95.4	95.5	0.12	15.00

Batch Information

Analytical Batch: SPT9111

Analytical Method: SM21 2540G

Instrument:

Analyst: KRL

Print Date: 08/21/2013 4:49:31PM

Method Blank

Blank ID: MB for HBN 1476059 [SPT/9116]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1169706

QC for Samples:

1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9116

Analytical Method: SM21 2540G

Instrument:

Analyst: KRL

Analytical Date/Time: 8/19/2013 6:00:00PM

Print Date: 08/21/2013 4:49:32PM

Duplicate Sample Summary

Original Sample ID: 1133882009

Duplicate Sample ID: 1169707

Analysis Date: 08/19/2013 18:00

Matrix: Soil/Solid (dry weight)

QC for Samples:

1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	41.8	42.6	2.00	15.00

Batch Information

Analytical Batch: SPT9116

Analytical Method: SM21 2540G

Instrument:

Analyst: KRL

Print Date: 08/21/2013 4:49:32PM

Method Blank

Blank ID: MB for HBN 1475090 [VXX/25065]
Blank Lab ID: 1169000

Matrix: Soil/Solid (dry weight)

QC for Samples:
1133826007, 1133826008, 1133826010, 1133826015

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	93.7	50-150		%

Batch Information

Analytical Batch: VFC11569
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 8/15/2013 9:54:00PM

Prep Batch: VXX25065
Prep Method: SW5035A
Prep Date/Time: 8/15/2013 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:33PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [VXX25065]
Blank Spike Lab ID: 1169003
Date Analyzed: 08/15/2013 22:49

Spike Duplicate ID: LCSD for HBN 1133826 [VXX25065]
Spike Duplicate Lab ID: 1169004
Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826007, 1133826008, 1133826010, 1133826015

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	10.0	9.90	99	10.0	9.89	99	(60-120)	0.09	(< 20)
Surrogates									
4-Bromofluorobenzene			90	1.25	91.7	92	(50-150)	1.40	

Batch Information

Analytical Batch: **VFC11569**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25065**
Prep Method: **SW5035A**
Prep Date/Time: **08/15/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:34PM

Method Blank

Blank ID: MB for HBN 1475090 [VXX/25065]
 Blank Lab ID: 1169000

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1133826007, 1133826008, 1133826010, 1133826015

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	8.00U	12.5	4.00	ug/Kg
Ethylbenzene	15.6U	25.0	7.80	ug/Kg
o-Xylene	15.6U	25.0	7.80	ug/Kg
P & M -Xylene	30.0U	50.0	15.0	ug/Kg
Toluene	15.6U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene	94.8	72-119		%

Batch Information

Analytical Batch: VFC11569
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 8/15/2013 9:54:00PM

Prep Batch: VXX25065
 Prep Method: SW5035A
 Prep Date/Time: 8/15/2013 8:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [VXX25065]
 Blank Spike Lab ID: 1169001
 Date Analyzed: 08/15/2013 22:12

Spike Duplicate ID: LCSD for HBN 1133826 [VXX25065]
 Spike Duplicate Lab ID: 1169002
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826007, 1133826008, 1133826010, 1133826015

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1380	111	1250	1340	108	(75-125)	2.80	(< 20)
Ethylbenzene	1250	1340	108	1250	1310	105	(75-125)	2.60	(< 20)
o-Xylene	1250	1330	106	1250	1290	103	(75-125)	2.90	(< 20)
P & M -Xylene	2500	2720	109	2500	2640	106	(80-125)	2.90	(< 20)
Toluene	1250	1360	109	1250	1330	106	(70-125)	2.60	(< 20)

Surrogates

1,4-Difluorobenzene	100	1250	99.7	100	(72-119)	0.30
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Batch Information

Analytical Batch: **VFC11569**
 Analytical Method: **SW8021B**
 Instrument: **Agilent 7890 PID/FID**
 Analyst: **ST**

Prep Batch: **VXX25065**
 Prep Method: **SW5035A**
 Prep Date/Time: **08/15/2013 08:00**
 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:35PM

Matrix Spike Summary

Original Sample ID: 1133799002
 MS Sample ID: 1169005 MS
 MSD Sample ID: 1169006 MSD

Analysis Date: 08/15/2013 23:26
 Analysis Date: 08/15/2013 23:44
 Analysis Date: 08/16/2013 0:03
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826007, 1133826008, 1133826010, 1133826015

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	134	768	905	100	768	870	96	75-125	3.90	(< 20)
Ethylbenzene	364	768	1070	92	768	1028	87	75-125	4.10	(< 20)
o-Xylene	235	768	959	94	768	923	90	75-125	3.90	(< 20)
P & M -Xylene	465	1540	1925	95	1540	1848	90	80-125	4.10	(< 20)
Toluene	81.3	768	899	106	768	832	98	70-125	7.80	(< 20)
Surrogates										
1,4-Difluorobenzene		768	714	93	768	715	93	72-119	0.19	

Batch Information

Analytical Batch: VFC11569
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 8/15/2013 11:44:00PM

Prep Batch: VXX25065
 Prep Method: AK101 Extraction (S)
 Prep Date/Time: 8/15/2013 8:00:00AM
 Prep Initial Wt./Vol.: 89.55g
 Prep Extract Vol: 25.00mL

Method Blank

Blank ID: MB for HBN 1476081 [VXX/25078]
 Blank Lab ID: 1169881

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1133826009

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.50U	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene	92	50-150		%

Batch Information

Analytical Batch: VFC11574
 Analytical Method: AK101
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 8/19/2013 10:43:00AM

Prep Batch: VXX25078
 Prep Method: SW5035A
 Prep Date/Time: 8/19/2013 8:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:36PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [VXX25078]
Blank Spike Lab ID: 1169884
Date Analyzed: 08/19/2013 12:34

Spike Duplicate ID: LCSD for HBN 1133826 [VXX25078]
Spike Duplicate Lab ID: 1169885
Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826009

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	10.0	10.2	102	10.0	10.4	104	(60-120)	1.60	(< 20)
Surrogates									
4-Bromofluorobenzene			97	1.25	93.3	93	(50-150)	3.80	

Batch Information

Analytical Batch: **VFC11574**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX25078**
Prep Method: **SW5035A**
Prep Date/Time: **08/19/2013 08:00**
Spike Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 10.0 mg/Kg Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:37PM

Method Blank

Blank ID: MB for HBN 1476081 [VXX/25078]
 Blank Lab ID: 1169881

Matrix: Soil/Solid (dry weight)

QC for Samples:
 1133826009

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	8.00U	12.5	4.00	ug/Kg
Ethylbenzene	15.6U	25.0	7.80	ug/Kg
o-Xylene	15.6U	25.0	7.80	ug/Kg
P & M -Xylene	30.0U	50.0	15.0	ug/Kg
Toluene	15.6U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene	95.3	72-119		%

Batch Information

Analytical Batch: VFC11574
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 8/19/2013 10:43:00AM

Prep Batch: VXX25078
 Prep Method: SW5035A
 Prep Date/Time: 8/19/2013 8:00:00AM
 Prep Initial Wt./Vol.: 50 g
 Prep Extract Vol: 25 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [VXX25078]
 Blank Spike Lab ID: 1169882
 Date Analyzed: 08/19/2013 11:57

Spike Duplicate ID: LCSD for HBN 1133826 [VXX25078]
 Spike Duplicate Lab ID: 1169883
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826009

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1280	102	1250	1290	103	(75-125)	0.95	(< 20)
Ethylbenzene	1250	1300	104	1250	1310	105	(75-125)	0.86	(< 20)
o-Xylene	1250	1280	102	1250	1290	103	(75-125)	0.86	(< 20)
P & M -Xylene	2500	2600	104	2500	2620	105	(80-125)	0.86	(< 20)
Toluene	1250	1290	104	1250	1310	105	(70-125)	1.00	(< 20)

Surrogates

1,4-Difluorobenzene			99	1250	98.7	99	(72-119)	0.02	
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Batch Information

Analytical Batch: VFC11574
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: ST

Prep Batch: VXX25078
 Prep Method: SW5035A
 Prep Date/Time: 08/19/2013 08:00
 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 08/21/2013 4:49:39PM



Matrix Spike Summary

Original Sample ID: 1133888001
 MS Sample ID: 1169886 MS
 MSD Sample ID: 1169887 MSD

Analysis Date: 08/19/2013 13:48
 Analysis Date: 08/19/2013 14:07
 Analysis Date: 08/19/2013 14:25
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826009

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	8.80U	1052	1097	104	1052	1119	106	75-125	1.90	(< 20)
Ethylbenzene	17.2U	1052	1123	107	1052	1141	108	75-125	1.60	(< 20)
o-Xylene	17.2U	1052	1099	104	1052	1123	107	75-125	2.20	(< 20)
P & M -Xylene	33.0U	2102	2249	107	2102	2282	108	80-125	1.50	(< 20)
Toluene	17.2U	1052	1110	105	1052	1128	107	70-125	1.60	(< 20)

Surrogates

1,4-Difluorobenzene		1052	1040	99	1052	1042	99	72-119	0.16	
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Batch Information

Analytical Batch: VFC11574
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: ST
 Analytical Date/Time: 8/19/2013 2:07:00PM

Prep Batch: VXX25078
 Prep Method: AK101 Extraction (S)
 Prep Date/Time: 8/19/2013 8:00:00AM
 Prep Initial Wt./Vol.: 67.10g
 Prep Extract Vol: 25.00mL

Print Date: 08/21/2013 4:49:39PM

Method Blank

Blank ID: MB for HBN 1475976 [XXX/29687]
 Blank Lab ID: 1169323

Matrix: Soil/Solid (dry weight)

QC for Samples:

1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane	88.3	60-120		%

Batch Information

Analytical Batch: XFC11023
 Analytical Method: AK102
 Instrument: HP 7890A FID SV E R
 Analyst: EAB
 Analytical Date/Time: 8/20/2013 5:30:00AM

Prep Batch: XXX29687
 Prep Method: SW3550C
 Prep Date/Time: 8/19/2013 10:00:00AM
 Prep Initial Wt./Vol.: 30 g
 Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [XXX29687]
 Blank Spike Lab ID: 1169324
 Date Analyzed: 08/20/2013 05:51

Spike Duplicate ID: LCSD for HBN 1133826 [XXX29687]
 Spike Duplicate Lab ID: 1169325
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	161	97	167	166	100	(75-125)	3.30	(< 20)
Surrogates									
5a Androstane			81	3.33	86.4	86	(60-120)	6.50	

Batch Information

Analytical Batch: **XFC11023**
 Analytical Method: **AK102**
 Instrument: **HP 7890A FID SV ER**
 Analyst: **EAB**

Prep Batch: **XXX29687**
 Prep Method: **SW3550C**
 Prep Date/Time: **08/19/2013 10:00**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:40PM

Method Blank

Blank ID: MB for HBN 1475976 [XXX/29687]
Blank Lab ID: 1169323

Matrix: Soil/Solid (dry weight)

QC for Samples:

1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	12.4U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62	87	60-120		%

Batch Information

Analytical Batch: XFC11023
Analytical Method: AK103
Instrument: HP 7890A FID SV E R
Analyst: EAB
Analytical Date/Time: 8/20/2013 5:30:00AM

Prep Batch: XXX29687
Prep Method: SW3550C
Prep Date/Time: 8/19/2013 10:00:00AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:41PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133826 [XXX29687]
 Blank Spike Lab ID: 1169324
 Date Analyzed: 08/20/2013 05:51

Spike Duplicate ID: LCSD for HBN 1133826 [XXX29687]
 Spike Duplicate Lab ID: 1169325
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1133826001, 1133826002, 1133826003, 1133826004, 1133826005, 1133826006, 1133826011, 1133826012, 1133826013, 1133826014

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	167	158	95	167	165	99	(60-120)	4.60	(< 20)
Surrogates									
n-Triacontane-d62			79	3.33	83.2	83	(60-120)	5.10	

Batch Information

Analytical Batch: **XFC11023**
 Analytical Method: **AK103**
 Instrument: **HP 7890A FID SV ER**
 Analyst: **EAB**

Prep Batch: **XXX29687**
 Prep Method: **SW3550C**
 Prep Date/Time: **08/19/2013 10:00**
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 08/21/2013 4:49:41PM



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1133826



Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Page 1 of 2

CLIENT: <u>BGS</u>		PHONE NO: <u>644-2900</u>		Section 3		Preservative		REMARKS/ LOC ID		
CONTACT: <u>S. Barsis</u>		PROJECT/ PWSID/ PERMIT#: <u>WAFco</u>		Section 3		Preservative		REMARKS/ LOC ID		
PROJECT NAME: <u>WAFco</u>		E-MAIL: <u>josh@bgesinc.com</u>		Section 3		Preservative		REMARKS/ LOC ID		
REPORTS TO: <u>S. Martin</u>		QUOTE #: <u>#10136 Open VUP</u>		Section 3		Preservative		REMARKS/ LOC ID		
INVOICE TO: <u>BGS</u>		P.O. #: <u>8/14/13</u>		Section 3		Preservative		REMARKS/ LOC ID		
RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	#	Type	Section 3	Section 4	DOD Project? Yes No	Data Deliverable Requirements:
	① A-D LF-E1	8-10-13	1830	S	1	MI	Moist	Moist		
	② A-D LF-E2	8-10-13	2000	S	1		BTEX	Moisture		
	③ A-D LF-D2	8-11-13	840	S	1		AKL1	AKL2		
	④ A-D LF-D1	8-11-13	1000	S	1		AKL2	AKL3		
	⑤ A-D LF-B2	8-11-13	1330	S	1		AKL2	AKL3		
	⑥ A-D LF-B1	8-11-13	1200	S	1		AKL2	AKL3		
	⑦ A-B LF-GAS	8-11-13	1500	S	3		AKL2	AKL3		
	⑧ A-B LF-MBEX	8-11-13	1730	S	3		AKL2	AKL3		
	⑨ A-B LF-MBEY	8-11-13	1730	S	3		AKL2	AKL3		
	⑩ AB LF-MBEZ	8-11-13	1730	S	3		AKL2	AKL3		
Relinquished By: (1)		Date	Time	Received By:						
<u>[Signature]</u>		8/14/13	10:02							
Relinquished By: (2)		Date	Time	Received By:						
<u>[Signature]</u>										
Relinquished By: (3)		Date	Time	Received By:						
<u>[Signature]</u>										
Relinquished By: (4)		Date	Time	Received For Laboratory By:						
<u>[Signature]</u>		8/14/13	9:59	<u>[Signature]</u>						
Cooler ID:		Requested Turnaround Time and/or Special Instructions:		Section 4		DOD Project? Yes No		Data Deliverable Requirements:		
Temp Blank °C: <u>1.9/20.5</u>		Chain of Custody Seal: (Circle)		Temp Blank °C: <u>1.9/20.5</u>		or Ambient []		Chain of Custody Seal: (Circle)		
								<input checked="" type="radio"/> INTACT <input type="radio"/> BROKEN <input type="radio"/> ABSENT (See attached Sample Receipt Form) (See attached Sample Receipt Form)		



SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	Yes No <u>N/A</u> <u>Yes</u> No N/A	
Temperature blank compliant* (i.e., 0-6°C after CF)? <i>* Note: Exemption permitted for chilled samples collected less than 8 hours ago.</i> Cooler ID: <u>1</u> @ <u>1,9</u> w/ Therm.ID: <u>205</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ <i>Note: If non-compliant, use form FS-0029 to document affected samples/analyses.</i> If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank <u>nor</u> cooler temp can be obtained, note "ambient" or "chilled."	<u>Yes</u> No N/A	
If temperature(s) <0°C, were all sample containers ice free?	Yes No <u>N/A</u>	
Delivery method (specify all that apply): <u>Client</u> USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/ tracking # See Attached or <u>N/A</u> Yes No <u>N/A</u>	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		<u>N/A</u> SRF Initiated by: <u>CES</u> N/A
Were samples received within hold time? <i>Note: Refer to form F-083 "Sample Guide" for hold time information.</i> Do samples match COC* (i.e., sample IDs, dates/times collected)? <i>* Note: Exemption permitted if times differ <1hr; in that case, use times on COC.</i> Were analyses requested unambiguous?	<u>Yes</u> No N/A <u>Yes</u> No N/A <u>Yes</u> No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	<u>Yes</u> No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	Yes No <u>N/A</u> <u>Yes</u> No N/A	
Were proper containers (type/mass/volume/preservative*) used? <i>* Note: Exemption permitted for waters to be analyzed for metals.</i> Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<u>Yes</u> No N/A <u>Yes</u> No N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	<u>Yes</u> No <u>N/A</u> <u>MI</u>	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	Yes No <u>N/A</u> Yes No <u>N/A</u>	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No <u>N/A</u>	
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No <u>N/A</u>	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <u>N/A</u>	SRF Completed by: <u>CES</u> PM = <u>ULP</u> N/A
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <u>N/A</u>	Peer Reviewed by: N/A
Additional notes (if applicable):		

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

Laboratory Report of Analysis

To: BGES Inc.
1042 E 6th Ave
Anchorage, AK 99501
(907)644-2900

Report Number: **1133805**

Client Project: **WAFCO**

Dear Jayne Martin,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.



SGS North America Inc.
Environmental Services - Alaska Division
Project Manager

Victoria Pennick

2013.08.21

10:37:04 -08'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Case Narrative

SGS Client: **BGES Inc.**
SGS Project: **1133805**
Project Name/Site: **WAFCO**
Project Contact: **Jayne Martin**

Refer to sample receipt form for information on sample condition.

MW13-0812 (1133805001) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

MW16-0812 (1133805002) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

MW40-0812 (1133805003) PS

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

PZ2-0812 (1133805004) PS

~0.5" of sediment in the DRO/RRO jar; sample was decanted prior to extraction.

CCV for HBN 1475066 (VMS/13684 (1168868) CCV

8260B - CCV recoveries for several analytes do not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

CCV for HBN 1475968 (VMS/13686 (1169298) CCV

8260B - CCV recoveries for several analytes do not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

LCS for HBN 1475065 [VXX/25063 (1168865) LCS

8260B - LCS recovery for chloromethane does not meet QC criteria (biased high). This analyte was not detected above the LOQ in the associated samples.

LCSD for HBN 1475065 [VXX/2506 (1168866) LCSD

8260B - LCSD recovery for chloromethane does not meet QC criteria (biased high). This analyte was not detected above the LOQ in the associated samples.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
MW13-0812	1133805001	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
MW16-0812	1133805002	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
MW40-0812	1133805003	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
PZ2-0812	1133805004	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
PZ3-0812	1133805005	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
Interception Trench	1133805006	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)
Trip Blank	1133805007	08/12/2013	08/14/2013	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIMS (PAH)	8270 PAH SIM Semi-Vol GC/MS Liq/Liq ext.
AK101	AK101/8021 Combo.
SW8021B	AK101/8021 Combo.
AK102	Diesel/Residual Range Organics Water
AK103	Diesel/Residual Range Organics Water
SW6020	Metals by ICP-MS
SW8260B	Volatile Organic Compounds (W) FULL

Print Date: 08/19/2013 6:11:09PM

Detectable Results Summary

Client Sample ID: **MW13-0812**

Lab Sample ID: 1133805001

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	2.01	mg/L
Residual Range Organics	1.12	mg/L
Benzene	11.1	ug/L

Volatile Fuels

Client Sample ID: **MW16-0812**

Lab Sample ID: 1133805002

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	20.3	mg/L
Residual Range Organics	0.674	mg/L
Benzene	1.74	ug/L
Gasoline Range Organics	0.125	mg/L
P & M -Xylene	2.32	ug/L

Volatile Fuels

Client Sample ID: **MW40-0812**

Lab Sample ID: 1133805003

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	22.7	mg/L
Residual Range Organics	0.780	mg/L
Benzene	1.51	ug/L

Volatile Fuels

Client Sample ID: **PZ2-0812**

Lab Sample ID: 1133805004

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluoranthene	0.0644	ug/L
Fluorene	0.109	ug/L
Phenanthrene	0.0673	ug/L
Pyrene	0.0697	ug/L

Detectable Results Summary

Client Sample ID: **PZ3-0812**

Lab Sample ID: 1133805005

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	2.05	ug/L
2-Methylnaphthalene	0.822	ug/L
Fluoranthene	0.0882	ug/L
Fluorene	0.606	ug/L
Naphthalene	2.09	ug/L
Phenanthrene	0.157	ug/L
Pyrene	0.130	ug/L

Volatile GC/MS

1,2,4-Trimethylbenzene	368	ug/L
1,3,5-Trimethylbenzene	202	ug/L
4-Isopropyltoluene	44.3	ug/L
Benzene	36.8	ug/L
Ethylbenzene	24.5	ug/L
Isopropylbenzene (Cumene)	10.6	ug/L
n-Propylbenzene	11.9	ug/L
Naphthalene	5.85	ug/L
o-Xylene	1.46	ug/L
P & M -Xylene	90.3	ug/L
sec-Butylbenzene	2.03	ug/L
tert-Butylbenzene	2.11	ug/L
Xylenes (total)	91.8	ug/L



Results of **MW13-0812**

Client Sample ID: **MW13-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805001
Lab Project ID: 1133805

Collection Date: 08/12/13 16:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	2.01		0.600	0.180	mg/L	1	08/19/13 08:51
Surrogates							
5a Androstane	73.8		50-150		%	1	08/19/13 08:51

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/13 08:51
Container ID: 1133805001-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	1.12		0.500	0.150	mg/L	1	08/19/13 08:51
Surrogates							
n-Triacontane-d62	73.8		50-150		%	1	08/19/13 08:51

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/19/13 08:51
Container ID: 1133805001-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:11PM



Results of **MW13-0812**

Client Sample ID: **MW13-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805001
Lab Project ID: 1133805

Collection Date: 08/12/13 16:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1	08/16/13 10:15
Surrogates							
4-Bromofluorobenzene	91.3		50-150		%	1	08/16/13 10:15

Batch Information

Analytical Batch: VFC11570
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 10:15
Container ID: 1133805001-A

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	11.1		0.500	0.150	ug/L	1	08/16/13 10:15
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/16/13 10:15
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/16/13 10:15
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	08/16/13 10:15
Toluene	1.00	U	1.00	0.310	ug/L	1	08/16/13 10:15
Surrogates							
1,4-Difluorobenzene	92.3		77-115		%	1	08/16/13 10:15

Batch Information

Analytical Batch: VFC11570
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 10:15
Container ID: 1133805001-A

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of **MW16-0812**

Client Sample ID: **MW16-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805002
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	20.3		0.625	0.188	mg/L	1	08/19/13 09:11
Surrogates							
5a Androstane	69.7		50-150		%	1	08/19/13 09:11

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/13 09:11
Container ID: 1133805002-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	0.674		0.521	0.156	mg/L	1	08/19/13 09:11
Surrogates							
n-Triacontane-d62	68.8		50-150		%	1	08/19/13 09:11

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/19/13 09:11
Container ID: 1133805002-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 960 mL
Prep Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:11PM



Results of **MW16-0812**

Client Sample ID: **MW16-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805002
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.125		0.100	0.0310	mg/L	1	08/16/13 16:27
Surrogates							
4-Bromofluorobenzene	91.9		50-150		%	1	08/16/13 16:27

Batch Information

Analytical Batch: VFC11570
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 16:27
Container ID: 1133805002-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	1.74		0.500	0.150	ug/L	1	08/16/13 16:27
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:27
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:27
P & M -Xylene	2.32		2.00	0.620	ug/L	1	08/16/13 16:27
Toluene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:27
Surrogates							
1,4-Difluorobenzene	90.5		77-115		%	1	08/16/13 16:27

Batch Information

Analytical Batch: VFC11570
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 16:27
Container ID: 1133805002-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of **MW40-0812**

Client Sample ID: **MW40-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805003
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	22.7		2.46	0.738	mg/L	4	08/19/13 10:53
Surrogates							
5a Androstane	72.1		50-150		%	4	08/19/13 10:53

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK102
Analyst: EAB
Analytical Date/Time: 08/19/13 10:53
Container ID: 1133805003-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 975 mL
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Residual Range Organics	0.780		0.513	0.154	mg/L	1	08/19/13 09:31
Surrogates							
n-Triacontane-d62	69		50-150		%	1	08/19/13 09:31

Batch Information

Analytical Batch: XFC11021
Analytical Method: AK103
Analyst: EAB
Analytical Date/Time: 08/19/13 09:31
Container ID: 1133805003-D

Prep Batch: XXX29664
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:20
Prep Initial Wt./Vol.: 975 mL
Prep Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:11PM



Results of **MW40-0812**

Client Sample ID: **MW40-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805003
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1	08/16/13 16:55
Surrogates							
4-Bromofluorobenzene	90.4		50-150		%	1	08/16/13 16:55

Batch Information

Analytical Batch: VFC11570
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 16:55
Container ID: 1133805003-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	1.51		0.500	0.150	ug/L	1	08/16/13 16:55
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:55
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:55
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	08/16/13 16:55
Toluene	1.00	U	1.00	0.310	ug/L	1	08/16/13 16:55
Surrogates							
1,4-Difluorobenzene	89.3		77-115		%	1	08/16/13 16:55

Batch Information

Analytical Batch: VFC11570
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 16:55
Container ID: 1133805003-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of **PZ2-0812**

Client Sample ID: **PZ2-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805004
Lab Project ID: 1133805

Collection Date: 08/12/13 18:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
2-Methylnaphthalene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Acenaphthene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Acenaphthylene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Anthracene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Benzo(a)Anthracene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Benzo[a]pyrene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Benzo[b]Fluoranthene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Benzo[g,h,i]perylene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Benzo[k]fluoranthene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Chrysene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Dibenzo[a,h]anthracene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Fluoranthene	0.0644		0.0546	0.0164	ug/L	1	08/16/13 19:24
Fluorene	0.109		0.0546	0.0164	ug/L	1	08/16/13 19:24
Indeno[1,2,3-c,d] pyrene	0.0546	U	0.0546	0.0164	ug/L	1	08/16/13 19:24
Naphthalene	0.109	U	0.109	0.0339	ug/L	1	08/16/13 19:24
Phenanthrene	0.0673		0.0546	0.0164	ug/L	1	08/16/13 19:24
Pyrene	0.0697		0.0546	0.0164	ug/L	1	08/16/13 19:24
Surrogates							
2-Fluorobiphenyl	84.6		50-110		%	1	08/16/13 19:24
Terphenyl-d14	87.3		50-135		%	1	08/16/13 19:24

Batch Information

Analytical Batch: XMS7520
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/16/13 19:24
Container ID: 1133805004-D

Prep Batch: XXX29663
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:15
Prep Initial Wt./Vol.: 915 mL
Prep Extract Vol: 1 mL



Results of PZ2-0812

Client Sample ID: **PZ2-0812**
 Client Project ID: **WAFCO**
 Lab Sample ID: 1133805004
 Lab Project ID: 1133805

Collection Date: 08/12/13 18:30
 Received Date: 08/14/13 09:59
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
1,1,1-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,1,2,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
1,1,2-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,1-Dichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,1-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,1-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2,3-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2,3-Trichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2,4-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2,4-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2-Dibromo-3-chloropropane	2.00	U	2.00	0.620	ug/L	1	08/15/13 14:44
1,2-Dibromoethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,2-Dichloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
1,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,3,5-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
1,3-Dichloropropane	0.400	U	0.400	0.120	ug/L	1	08/15/13 14:44
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
2,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
2-Butanone (MEK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 14:44
2-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
2-Hexanone	10.0	U	10.0	3.10	ug/L	1	08/15/13 14:44
4-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
4-Isopropyltoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
4-Methyl-2-pentanone (MIBK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 14:44
Benzene	0.400	U	0.400	0.120	ug/L	1	08/15/13 14:44
Bromobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Bromochloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Bromodichloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
Bromoform	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Bromomethane	3.00	U	3.00	0.940	ug/L	1	08/15/13 14:44
Carbon disulfide	2.00	U	2.00	0.620	ug/L	1	08/15/13 14:44
Carbon tetrachloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
Chloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Chloroform	1.00	U	1.00	0.300	ug/L	1	08/15/13 14:44
Chloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
cis-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
cis-1,3-Dichloropropene	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
Dibromochloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 14:44
Dibromomethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Dichlorodifluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44

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Results of **PZ2-0812**

Client Sample ID: **PZ2-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805004
Lab Project ID: 1133805

Collection Date: 08/12/13 18:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Hexachlorobutadiene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Isopropylbenzene (Cumene)	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Methyl-t-butyl ether	5.00	U	5.00	1.50	ug/L	1	08/15/13 14:44
Methylene chloride	5.00	U	5.00	1.00	ug/L	1	08/15/13 14:44
n-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
n-Propylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Naphthalene	2.00	U	2.00	0.620	ug/L	1	08/15/13 14:44
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	08/15/13 14:44
sec-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Styrene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
tert-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Tetrachloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Toluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
trans-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
trans-1,3-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Trichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Trichlorofluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Vinyl chloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 14:44
Xylenes (total)	3.00	U	3.00	0.940	ug/L	1	08/15/13 14:44

Surrogates

1,2-Dichloroethane-D4	107		70-120		%	1	08/15/13 14:44
4-Bromofluorobenzene	100		75-120		%	1	08/15/13 14:44
Toluene-d8	98.1		85-120		%	1	08/15/13 14:44

Batch Information

Analytical Batch: VMS13684
Analytical Method: SW8260B
Analyst: HM
Analytical Date/Time: 08/15/13 14:44
Container ID: 1133805004-A

Prep Batch: VXX25063
Prep Method: SW5030B
Prep Date/Time: 08/15/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of **PZ3-0812**

Client Sample ID: **PZ3-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805005
Lab Project ID: 1133805

Collection Date: 08/12/13 18:00
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	2.05		0.0500	0.0150	ug/L	1	08/16/13 19:39
2-Methylnaphthalene	0.822		0.0500	0.0150	ug/L	1	08/16/13 19:39
Acenaphthene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Acenaphthylene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Benzo(a)Anthracene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Benzo[a]pyrene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Benzo[b]Fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Benzo[g,h,i]perylene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Benzo[k]fluoranthene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Chrysene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Dibenzo[a,h]anthracene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Fluoranthene	0.0882		0.0500	0.0150	ug/L	1	08/16/13 19:39
Fluorene	0.606		0.0500	0.0150	ug/L	1	08/16/13 19:39
Indeno[1,2,3-c,d] pyrene	0.0500	U	0.0500	0.0150	ug/L	1	08/16/13 19:39
Naphthalene	2.09		0.100	0.0310	ug/L	1	08/16/13 19:39
Phenanthrene	0.157		0.0500	0.0150	ug/L	1	08/16/13 19:39
Pyrene	0.130		0.0500	0.0150	ug/L	1	08/16/13 19:39
Surrogates							
2-Fluorobiphenyl	87.8		50-110		%	1	08/16/13 19:39
Terphenyl-d14	86.3		50-135		%	1	08/16/13 19:39

Batch Information

Analytical Batch: XMS7520
Analytical Method: 8270D SIMS (PAH)
Analyst: RTS
Analytical Date/Time: 08/16/13 19:39
Container ID: 1133805005-D

Prep Batch: XXX29663
Prep Method: SW3520C
Prep Date/Time: 08/16/13 09:15
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:11PM



Results of PZ3-0812

Client Sample ID: **PZ3-0812**
 Client Project ID: **WAFCO**
 Lab Sample ID: 1133805005
 Lab Project ID: 1133805

Collection Date: 08/12/13 18:00
 Received Date: 08/14/13 09:59
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
1,1,1-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,1,2,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
1,1,2-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,1-Dichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,1-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,1-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2,3-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2,3-Trichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2,4-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2,4-Trimethylbenzene	368		10.0	3.10	ug/L	10	08/16/13 17:48
1,2-Dibromo-3-chloropropane	2.00	U	2.00	0.620	ug/L	1	08/15/13 15:07
1,2-Dibromoethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,2-Dichloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
1,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,3,5-Trimethylbenzene	202		10.0	3.10	ug/L	10	08/16/13 17:48
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
1,3-Dichloropropane	0.400	U	0.400	0.120	ug/L	1	08/15/13 15:07
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
2,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
2-Butanone (MEK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 15:07
2-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
2-Hexanone	10.0	U	10.0	3.10	ug/L	1	08/15/13 15:07
4-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
4-Isopropyltoluene	44.3		1.00	0.310	ug/L	1	08/15/13 15:07
4-Methyl-2-pentanone (MIBK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 15:07
Benzene	36.8		0.400	0.120	ug/L	1	08/15/13 15:07
Bromobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Bromochloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Bromodichloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
Bromoform	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Bromomethane	3.00	U	3.00	0.940	ug/L	1	08/15/13 15:07
Carbon disulfide	2.00	U	2.00	0.620	ug/L	1	08/15/13 15:07
Carbon tetrachloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
Chloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Chloroform	1.00	U	1.00	0.300	ug/L	1	08/15/13 15:07
Chloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
cis-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
cis-1,3-Dichloropropene	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
Dibromochloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 15:07
Dibromomethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Dichlorodifluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07

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Results of **PZ3-0812**

Client Sample ID: **PZ3-0812**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805005
Lab Project ID: 1133805

Collection Date: 08/12/13 18:00
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by **Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Ethylbenzene	24.5		1.00	0.310	ug/L	1	08/15/13 15:07
Hexachlorobutadiene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Isopropylbenzene (Cumene)	10.6		1.00	0.310	ug/L	1	08/15/13 15:07
Methyl-t-butyl ether	5.00	U	5.00	1.50	ug/L	1	08/15/13 15:07
Methylene chloride	5.00	U	5.00	1.00	ug/L	1	08/15/13 15:07
n-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
n-Propylbenzene	11.9		1.00	0.310	ug/L	1	08/15/13 15:07
Naphthalene	5.85		2.00	0.620	ug/L	1	08/15/13 15:07
o-Xylene	1.46		1.00	0.310	ug/L	1	08/15/13 15:07
P & M -Xylene	90.3		2.00	0.620	ug/L	1	08/15/13 15:07
sec-Butylbenzene	2.03		1.00	0.310	ug/L	1	08/15/13 15:07
Styrene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
tert-Butylbenzene	2.11		1.00	0.310	ug/L	1	08/15/13 15:07
Tetrachloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Toluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
trans-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
trans-1,3-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Trichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Trichlorofluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Vinyl chloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 15:07
Xylenes (total)	91.8		3.00	0.940	ug/L	1	08/15/13 15:07

Surrogates

1,2-Dichloroethane-D4	106		70-120		%	1	08/15/13 15:07
4-Bromofluorobenzene	100		75-120		%	1	08/15/13 15:07
Toluene-d8	99.7		85-120		%	1	08/15/13 15:07

Batch Information

Analytical Batch: VMS13684
Analytical Method: SW8260B
Analyst: HM
Analytical Date/Time: 08/15/13 15:07
Container ID: 1133805005-A

Prep Batch: VXX25063
Prep Method: SW5030B
Prep Date/Time: 08/15/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS13686
Analytical Method: SW8260B
Analyst: HM
Analytical Date/Time: 08/16/13 17:48
Container ID: 1133805005-C

Prep Batch: VXX25067
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of Interception Trench

Client Sample ID: **Interception Trench**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805006
Lab Project ID: 1133805

Collection Date: 08/12/13 12:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Iron	1000	U	1000	310	ug/L	5	08/15/13 12:18

Batch Information

Analytical Batch: MMS8125
Analytical Method: SW6020
Analyst: SCL
Analytical Date/Time: 08/15/13 12:18
Container ID: 1133805006-A

Prep Batch: MXX26864
Prep Method: SW3010A
Prep Date/Time: 08/14/13 21:50
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 08/19/2013 6:11:11PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805007
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.100	U	0.100	0.0310	mg/L	1	08/16/13 13:21
Surrogates							
4-Bromofluorobenzene	95.1		50-150		%	1	08/16/13 13:21

Batch Information

Analytical Batch: VFC11570
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 08/16/13 13:21
Container ID: 1133805007-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Benzene	0.500	U	0.500	0.150	ug/L	1	08/16/13 13:21
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/16/13 13:21
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/16/13 13:21
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	08/16/13 13:21
Toluene	1.00	U	1.00	0.310	ug/L	1	08/16/13 13:21
Surrogates							
1,4-Difluorobenzene	93.3		77-115		%	1	08/16/13 13:21

Batch Information

Analytical Batch: VFC11570
Analytical Method: SW8021B
Analyst: ST
Analytical Date/Time: 08/16/13 13:21
Container ID: 1133805007-B

Prep Batch: VXX25068
Prep Method: SW5030B
Prep Date/Time: 08/16/13 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **WAFCO**
Lab Sample ID: 1133805007
Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
Received Date: 08/14/13 09:59
Matrix: Water (Surface, Eff., Ground)
Solids (%):

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
1,1,1-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,1,2,2-Tetrachloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
1,1,2-Trichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,1-Dichloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,1-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,1-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2,3-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2,3-Trichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2,4-Trichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2,4-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2-Dibromo-3-chloropropane	2.00	U	2.00	0.620	ug/L	1	08/15/13 13:12
1,2-Dibromoethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,2-Dichloroethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
1,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,3,5-Trimethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,3-Dichlorobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
1,3-Dichloropropane	0.400	U	0.400	0.120	ug/L	1	08/15/13 13:12
1,4-Dichlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
2,2-Dichloropropane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
2-Butanone (MEK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 13:12
2-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
2-Hexanone	10.0	U	10.0	3.10	ug/L	1	08/15/13 13:12
4-Chlorotoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
4-Isopropyltoluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
4-Methyl-2-pentanone (MIBK)	10.0	U	10.0	3.10	ug/L	1	08/15/13 13:12
Benzene	0.400	U	0.400	0.120	ug/L	1	08/15/13 13:12
Bromobenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Bromochloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Bromodichloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
Bromoform	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Bromomethane	3.00	U	3.00	0.940	ug/L	1	08/15/13 13:12
Carbon disulfide	2.00	U	2.00	0.620	ug/L	1	08/15/13 13:12
Carbon tetrachloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Chlorobenzene	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
Chloroethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Chloroform	1.00	U	1.00	0.300	ug/L	1	08/15/13 13:12
Chloromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
cis-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
cis-1,3-Dichloropropene	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
Dibromochloromethane	0.500	U	0.500	0.150	ug/L	1	08/15/13 13:12
Dibromomethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Dichlorodifluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12

Print Date: 08/19/2013 6:11:11PM



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **WAFCO**
 Lab Sample ID: 1133805007
 Lab Project ID: 1133805

Collection Date: 08/12/13 14:30
 Received Date: 08/14/13 09:59
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Ethylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Hexachlorobutadiene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Isopropylbenzene (Cumene)	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Methyl-t-butyl ether	5.00	U	5.00	1.50	ug/L	1	08/15/13 13:12
Methylene chloride	5.00	U	5.00	1.00	ug/L	1	08/15/13 13:12
n-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
n-Propylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Naphthalene	2.00	U	2.00	0.620	ug/L	1	08/15/13 13:12
o-Xylene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
P & M -Xylene	2.00	U	2.00	0.620	ug/L	1	08/15/13 13:12
sec-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Styrene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
tert-Butylbenzene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Tetrachloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Toluene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
trans-1,2-Dichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
trans-1,3-Dichloropropene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Trichloroethene	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Trichlorofluoromethane	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Vinyl chloride	1.00	U	1.00	0.310	ug/L	1	08/15/13 13:12
Xylenes (total)	3.00	U	3.00	0.940	ug/L	1	08/15/13 13:12

Surrogates

1,2-Dichloroethane-D4	104		70-120		%	1	08/15/13 13:12
4-Bromofluorobenzene	100		75-120		%	1	08/15/13 13:12
Toluene-d8	100		85-120		%	1	08/15/13 13:12

Batch Information

Analytical Batch: VMS13684
 Analytical Method: SW8260B
 Analyst: HM
 Analytical Date/Time: 08/15/13 13:12
 Container ID: 1133805007-A

Prep Batch: VXX25063
 Prep Method: SW5030B
 Prep Date/Time: 08/15/13 08:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:11PM

Method Blank

Blank ID: MB for HBN 1473261 [MXX/26864]
Blank Lab ID: 1168387

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1133805006

Results by SW6020

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Iron	620U	1000	310	ug/L

Batch Information

Analytical Batch: MMS8125
Analytical Method: SW6020
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: SCL
Analytical Date/Time: 8/15/2013 11:30:13AM

Prep Batch: MXX26864
Prep Method: SW3010A
Prep Date/Time: 8/14/2013 9:50:00PM
Prep Initial Wt./Vol.: 25 mL
Prep Extract Vol: 25 mL

Print Date: 08/19/2013 6:11:12PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [MXX26864]
Blank Spike Lab ID: 1168388
Date Analyzed: 08/15/2013 11:32

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805006

Results by SW6020

<u>Parameter</u>	Blank Spike (ug/L)			<u>CL</u>
	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	
Iron	5000	4930	99	(80-120)

Batch Information

Analytical Batch: **MMS8125**
Analytical Method: **SW6020**
Instrument: **Perkin Elmer Sciex ICP-MS P3**
Analyst: **SCL**

Prep Batch: **MXX26864**
Prep Method: **SW3010A**
Prep Date/Time: **08/14/2013 21:50**
Spike Init Wt./Vol.: 5000 ug/L Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 08/19/2013 6:11:14PM

Method Blank

Blank ID: MB for HBN 1475065 [VXX/25063]
 Blank Lab ID: 1168864

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805004, 1133805005, 1133805007

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.300U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.620U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.300U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.620U	1.00	0.310	ug/L
1,1-Dichloroethane	0.620U	1.00	0.310	ug/L
1,1-Dichloroethene	0.620U	1.00	0.310	ug/L
1,1-Dichloropropene	0.620U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.620U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.620U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.620U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.620U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	1.24U	2.00	0.620	ug/L
1,2-Dibromoethane	0.620U	1.00	0.310	ug/L
1,2-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,2-Dichloroethane	0.300U	0.500	0.150	ug/L
1,2-Dichloropropane	0.620U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.620U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.620U	1.00	0.310	ug/L
1,3-Dichloropropane	0.240U	0.400	0.120	ug/L
1,4-Dichlorobenzene	0.300U	0.500	0.150	ug/L
2,2-Dichloropropane	0.620U	1.00	0.310	ug/L
2-Butanone (MEK)	6.20U	10.0	3.10	ug/L
2-Chlorotoluene	0.620U	1.00	0.310	ug/L
2-Hexanone	6.20U	10.0	3.10	ug/L
4-Chlorotoluene	0.620U	1.00	0.310	ug/L
4-Isopropyltoluene	0.620U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	6.20U	10.0	3.10	ug/L
Benzene	0.240U	0.400	0.120	ug/L
Bromobenzene	0.620U	1.00	0.310	ug/L
Bromochloromethane	0.620U	1.00	0.310	ug/L
Bromodichloromethane	0.300U	0.500	0.150	ug/L
Bromoform	0.620U	1.00	0.310	ug/L
Bromomethane	1.88U	3.00	0.940	ug/L
Carbon disulfide	1.24U	2.00	0.620	ug/L
Carbon tetrachloride	0.620U	1.00	0.310	ug/L
Chlorobenzene	0.300U	0.500	0.150	ug/L
Chloroethane	0.620U	1.00	0.310	ug/L
Chloroform	0.600U	1.00	0.300	ug/L

Print Date: 08/19/2013 6:11:15PM

Method Blank

Blank ID: MB for HBN 1475065 [VXX/25063]
 Blank Lab ID: 1168864

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805004, 1133805005, 1133805007

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloromethane	0.620U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.620U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.300U	0.500	0.150	ug/L
Dibromochloromethane	0.300U	0.500	0.150	ug/L
Dibromomethane	0.620U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.620U	1.00	0.310	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
Hexachlorobutadiene	0.620U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.620U	1.00	0.310	ug/L
Methylene chloride	2.00U	5.00	1.00	ug/L
Methyl-t-butyl ether	3.00U	5.00	1.50	ug/L
Naphthalene	1.24U	2.00	0.620	ug/L
n-Butylbenzene	0.620U	1.00	0.310	ug/L
n-Propylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
sec-Butylbenzene	0.620U	1.00	0.310	ug/L
Styrene	0.620U	1.00	0.310	ug/L
tert-Butylbenzene	0.620U	1.00	0.310	ug/L
Tetrachloroethene	0.620U	1.00	0.310	ug/L
Toluene	0.620U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.620U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.620U	1.00	0.310	ug/L
Trichloroethene	0.620U	1.00	0.310	ug/L
Trichlorofluoromethane	0.620U	1.00	0.310	ug/L
Vinyl chloride	0.620U	1.00	0.310	ug/L
Xylenes (total)	1.88U	3.00	0.940	ug/L
Surrogates				
1,2-Dichloroethane-D4	104	70-120		%
4-Bromofluorobenzene	100	75-120		%
Toluene-d8	97.2	85-120		%

Method Blank

Blank ID: MB for HBN 1475065 [VXX/25063]
Blank Lab ID: 1168864

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1133805004, 1133805005, 1133805007

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS13684
Analytical Method: SW8260B
Instrument: HP 5890 Series II MS1 VJA
Analyst: HM
Analytical Date/Time: 8/15/2013 10:54:01AM

Prep Batch: VXX25063
Prep Method: SW5030B
Prep Date/Time: 8/15/2013 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:15PM

Leaching Blank

Blank ID: LB for HBN 1473009 [TCLP/6920]

Blank Lab ID: 1168354

QC for Samples:

1133805004, 1133805005, 1133805007

Matrix: Water (Surface, Eff., Ground)

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1-Dichloroethene	124U	200	62.0	ug/L
1,2-Dichloroethane	60.0U	100	30.0	ug/L
1,4-Dichlorobenzene	60.0U	100	30.0	ug/L
2-Butanone (MEK)	1240U	2000	620	ug/L
Benzene	48.0U	80.0	24.0	ug/L
Carbon tetrachloride	124U	200	62.0	ug/L
Chlorobenzene	60.0U	100	30.0	ug/L
Chloroform	120U	200	60.0	ug/L
Hexachlorobutadiene	124U	200	62.0	ug/L
Tetrachloroethene	124U	200	62.0	ug/L
Trichloroethene	124U	200	62.0	ug/L
Vinyl chloride	124U	200	62.0	ug/L
Surrogates				
1,2-Dichloroethane-D4	105	70-120		%
4-Bromofluorobenzene	102	75-120		%
Toluene-d8	99.6	85-120		%

Batch Information

Analytical Batch: VMS13684
 Analytical Method: SW8260B
 Instrument: HP 5890 Series II MS1 VJA
 Analyst: HM
 Analytical Date/Time: 8/15/2013 3:54:00PM

Prep Batch: VXX25063
 Prep Method: SW5030B
 Prep Date/Time: 8/15/2013 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25063]
 Blank Spike Lab ID: 1168865
 Date Analyzed: 08/15/2013 11:18

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25063]
 Spike Duplicate Lab ID: 1168866
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805004, 1133805005, 1133805007

Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	34.0	113	30	30.1	100	(80-130)	12.20	(< 20)
1,1,1-Trichloroethane	30	33.7	112	30	30.3	101	(65-130)	10.70	(< 20)
1,1,2,2-Tetrachloroethane	30	30.9	103	30	30.1	100	(65-130)	2.40	(< 20)
1,1,2-Trichloroethane	30	34.0	113	30	31.3	104	(75-125)	8.20	(< 20)
1,1-Dichloroethane	30	29.3	98	30	27.1	90	(70-135)	7.70	(< 20)
1,1-Dichloroethene	30	31.1	104	30	28.3	94	(70-130)	9.40	(< 20)
1,1-Dichloropropene	30	31.6	105	30	28.6	95	(75-130)	10.20	(< 20)
1,2,3-Trichlorobenzene	30	31.5	105	30	30.6	102	(55-140)	3.10	(< 20)
1,2,3-Trichloropropane	30	31.1	104	30	30.3	101	(75-125)	2.50	(< 20)
1,2,4-Trichlorobenzene	30	32.2	107	30	30.9	103	(65-135)	4.20	(< 20)
1,2,4-Trimethylbenzene	30	31.1	104	30	29.0	97	(75-130)	7.00	(< 20)
1,2-Dibromo-3-chloropropane	30	32.4	108	30	31.9	106	(50-130)	1.60	(< 20)
1,2-Dibromoethane	30	31.7	106	30	29.3	98	(80-120)	7.80	(< 20)
1,2-Dichlorobenzene	30	30.8	103	30	29.0	97	(70-120)	6.00	(< 20)
1,2-Dichloroethane	30	33.8	113	30	31.3	104	(70-130)	7.70	(< 20)
1,2-Dichloropropane	30	33.9	113	30	30.2	101	(75-125)	11.50	(< 20)
1,3,5-Trimethylbenzene	30	31.5	105	30	28.9	96	(75-130)	8.40	(< 20)
1,3-Dichlorobenzene	30	31.8	106	30	29.3	98	(75-125)	7.90	(< 20)
1,3-Dichloropropane	30	33.4	111	30	30.7	102	(75-125)	8.20	(< 20)
1,4-Dichlorobenzene	30	30.6	102	30	28.5	95	(75-125)	7.10	(< 20)
2,2-Dichloropropane	30	32.9	110	30	29.2	97	(70-135)	12.00	(< 20)
2-Butanone (MEK)	90	91.2	101	90	92.0	102	(30-150)	0.93	(< 20)
2-Chlorotoluene	30	30.0	100	30	27.8	93	(75-125)	7.40	(< 20)
2-Hexanone	90	91.1	101	90	93.0	103	(55-130)	2.00	(< 20)
4-Chlorotoluene	30	30.9	103	30	29.2	98	(75-130)	5.40	(< 20)
4-Isopropyltoluene	30	30.6	102	30	29.0	97	(75-130)	5.60	(< 20)
4-Methyl-2-pentanone (MIBK)	90	93.0	103	90	92.5	103	(60-135)	0.49	(< 20)
Benzene	30	29.5	98	30	27.0	90	(80-120)	9.00	(< 20)
Bromobenzene	30	30.5	102	30	28.8	96	(75-125)	5.80	(< 20)
Bromochloromethane	30	31.4	105	30	28.8	96	(65-130)	8.80	(< 20)
Bromodichloromethane	30	35.2	117	30	31.7	106	(75-120)	10.30	(< 20)
Bromoform	30	33.0	110	30	31.3	104	(70-130)	5.50	(< 20)
Bromomethane	30	35.4	118	30	36.8	123	(30-145)	4.00	(< 20)

Print Date: 08/19/2013 6:11:15PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25063]
 Blank Spike Lab ID: 1168865
 Date Analyzed: 08/15/2013 11:18

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25063]
 Spike Duplicate Lab ID: 1168866
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805004, 1133805005, 1133805007

Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon disulfide	45	46.0	102	45	43.9	97	(35-160)	4.80	(< 20)
Carbon tetrachloride	30	36.7	122	30	34.0	113	(65-140)	7.50	(< 20)
Chlorobenzene	30	31.2	104	30	27.6	92	(80-120)	12.50	(< 20)
Chloroethane	30	38.4	128	30	35.5	118	(60-135)	7.60	(< 20)
Chloroform	30	32.0	107	30	29.2	97	(65-135)	9.20	(< 20)
Chloromethane	30	43.2	144	* 30	41.6	139	* (40-125)	3.70	(< 20)
cis-1,2-Dichloroethene	30	30.4	101	30	26.6	89	(70-125)	13.20	(< 20)
cis-1,3-Dichloropropene	30	35.6	119	30	32.4	108	(70-130)	9.40	(< 20)
Dibromochloromethane	30	31.7	106	30	29.1	97	(60-135)	8.40	(< 20)
Dibromomethane	30	32.5	108	30	31.5	105	(75-125)	3.20	(< 20)
Dichlorodifluoromethane	30	45.4	151	30	41.9	140	(30-155)	8.20	(< 20)
Ethylbenzene	30	30.5	102	30	27.0	90	(75-125)	12.10	(< 20)
Hexachlorobutadiene	30	29.8	99	30	29.1	97	(50-140)	2.20	(< 20)
Isopropylbenzene (Cumene)	30	31.0	103	30	27.5	92	(75-125)	12.10	(< 20)
Methyl-t-butyl ether	45	50.7	113	45	48.2	107	(65-125)	5.10	(< 20)
Methylene chloride	30	30.3	101	30	28.8	96	(55-140)	5.30	(< 20)
n-Butylbenzene	30	32.2	107	30	30.1	100	(70-135)	6.60	(< 20)
n-Propylbenzene	30	30.8	103	30	28.6	96	(70-130)	7.20	(< 20)
Naphthalene	30	29.5	99	30	29.6	99	(55-140)	0.34	(< 20)
o-Xylene	30	32.2	107	30	27.9	93	(80-120)	14.40	(< 20)
P & M -Xylene	60	61.5	103	60	54.3	91	(75-130)	12.40	(< 20)
sec-Butylbenzene	30	30.9	103	30	28.8	96	(70-125)	7.00	(< 20)
Styrene	30	31.8	106	30	28.8	96	(65-135)	9.90	(< 20)
tert-Butylbenzene	30	31.1	104	30	28.6	95	(70-130)	8.30	(< 20)
Tetrachloroethene	30	30.1	100	30	27.0	90	(45-150)	10.80	(< 20)
Toluene	30	29.9	100	30	26.8	89	(75-120)	11.00	(< 20)
trans-1,2-Dichloroethene	30	28.7	96	30	26.9	90	(60-140)	6.60	(< 20)
trans-1,3-Dichloropropene	30	31.9	106	30	29.3	98	(55-140)	8.70	(< 20)
Trichloroethene	30	32.3	108	30	29.1	97	(70-125)	10.50	(< 20)
Trichlorofluoromethane	30	35.0	117	30	33.1	110	(60-145)	5.70	(< 20)
Vinyl chloride	30	40.4	135	30	38.0	127	(50-145)	6.10	(< 20)
Xylenes (total)	90	93.8	104	90	82.2	91	(80-120)	13.10	(< 20)

Surrogates

Print Date: 08/19/2013 6:11:15PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25063]
 Blank Spike Lab ID: 1168865
 Date Analyzed: 08/15/2013 11:18

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25063]
 Spike Duplicate Lab ID: 1168866
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805004, 1133805005, 1133805007

Results by SW8260B

Parameter	Blank Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2-Dichloroethane-D4			106	30	105	105	(70-120)	1.60	
4-Bromofluorobenzene			102	30	100	100	(75-120)	2.10	
Toluene-d8			101	30	96.4	96	(85-120)	4.20	

Batch Information

Analytical Batch: VMS13684
 Analytical Method: SW8260B
 Instrument: HP 5890 Series II MS1 VJA
 Analyst: HM

Prep Batch: VXX25063
 Prep Method: SW5030B
 Prep Date/Time: 08/15/2013 08:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:15PM

Method Blank

Blank ID: MB for HBN 1475967 [VXX/25067]
 Blank Lab ID: 1169289

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805005

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.620U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.620U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4	106	70-120		%
4-Bromofluorobenzene	98.1	75-120		%
Toluene-d8	98.3	85-120		%

Batch Information

Analytical Batch: VMS13686
 Analytical Method: SW8260B
 Instrument: HP 5890 Series II MS1 VJA
 Analyst: HM
 Analytical Date/Time: 8/16/2013 12:14:01PM

Prep Batch: VXX25067
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2013 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:17PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25067]
Blank Spike Lab ID: 1169290
Date Analyzed: 08/16/2013 12:37

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25067]
Spike Duplicate Lab ID: 1169291
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805005

Results by SW8260B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trimethylbenzene	30	29.0	97	30	30.7	102	(75-130)	5.50	(< 20)
1,3,5-Trimethylbenzene	30	29.0	97	30	30.9	103	(75-130)	6.30	(< 20)
Surrogates									
1,2-Dichloroethane-D4			103	30	103	103	(70-120)	0.58	
4-Bromofluorobenzene			98	30	103	103	(75-120)	5.60	
Toluene-d8			102	30	99.9	100	(85-120)	1.90	

Batch Information

Analytical Batch: VMS13686
Analytical Method: SW8260B
Instrument: HP 5890 Series II MS1 VJA
Analyst: HM

Prep Batch: VXX25067
Prep Method: SW5030B
Prep Date/Time: 08/16/2013 08:00
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:18PM

Method Blank

Blank ID: MB for HBN 1475969 [VXX/25068]
 Blank Lab ID: 1169292

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805001, 1133805002, 1133805003, 1133805007

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0620U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene	95.8	50-150		%

Batch Information

Analytical Batch: VFC11570
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 8/16/2013 8:24:00AM

Prep Batch: VXX25068
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2013 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:19PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25068]
 Blank Spike Lab ID: 1169295
 Date Analyzed: 08/16/2013 09:20

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25068]
 Spike Duplicate Lab ID: 1169296
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805001, 1133805002, 1133805003, 1133805007

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.996	100	1.00	1.00	100	(60-120)	0.85	(< 20)
Surrogates									
4-Bromofluorobenzene			98	0.0500	101	101	(50-150)	2.70	

Batch Information

Analytical Batch: **VFC11570**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX25068**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/16/2013 08:00**
 Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 08/19/2013 6:11:20PM

Method Blank

Blank ID: MB for HBN 1475969 [VXX/25068]
 Blank Lab ID: 1169292

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805001, 1133805002, 1133805003, 1133805007

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.300U	0.500	0.150	ug/L
Ethylbenzene	0.620U	1.00	0.310	ug/L
o-Xylene	0.620U	1.00	0.310	ug/L
P & M -Xylene	1.24U	2.00	0.620	ug/L
Toluene	0.620U	1.00	0.310	ug/L
Surrogates				
1,4-Difluorobenzene	95	77-115		%

Batch Information

Analytical Batch: VFC11570
 Analytical Method: SW8021B
 Instrument: Agilent 7890A PID/FID
 Analyst: ST
 Analytical Date/Time: 8/16/2013 8:24:00AM

Prep Batch: VXX25068
 Prep Method: SW5030B
 Prep Date/Time: 8/16/2013 8:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [VXX25068]
 Blank Spike Lab ID: 1169293
 Date Analyzed: 08/16/2013 09:02

Spike Duplicate ID: LCSD for HBN 1133805 [VXX25068]
 Spike Duplicate Lab ID: 1169294
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805001, 1133805002, 1133805003, 1133805007

Results by SW8021B

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	100	97.4	97	100	94.2	94	(80-120)	3.30	(< 20)
Ethylbenzene	100	108	108	100	103	103	(75-125)	4.70	(< 20)
o-Xylene	100	106	106	100	101	101	(80-120)	4.00	(< 20)
P & M -Xylene	200	216	108	200	207	103	(75-130)	4.30	(< 20)
Toluene	100	109	109	100	103	103	(75-120)	5.30	(< 20)

Surrogates

1,4-Difluorobenzene	97	50	96.9	97	(77-115)	0.23
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Batch Information

Analytical Batch: **VFC11570**
 Analytical Method: **SW8021B**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **ST**

Prep Batch: **VXX25068**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/16/2013 08:00**
 Spike Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 100 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1475072 [XXX/29663]
 Blank Lab ID: 1168875

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805004, 1133805005

Results by 8270D SIMS (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	0.0300U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0300U	0.0500	0.0150	ug/L
Acenaphthene	0.0300U	0.0500	0.0150	ug/L
Acenaphthylene	0.0300U	0.0500	0.0150	ug/L
Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0300U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0300U	0.0500	0.0150	ug/L
Benzo[b]Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0300U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0300U	0.0500	0.0150	ug/L
Chrysene	0.0300U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0300U	0.0500	0.0150	ug/L
Fluoranthene	0.0300U	0.0500	0.0150	ug/L
Fluorene	0.0300U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0300U	0.0500	0.0150	ug/L
Naphthalene	0.0620U	0.100	0.0310	ug/L
Phenanthrene	0.0300U	0.0500	0.0150	ug/L
Pyrene	0.0300U	0.0500	0.0150	ug/L
Surrogates				
2-Fluorobiphenyl	91.5	50-110		%
Terphenyl-d14	104	50-135		%

Batch Information

Analytical Batch: XMS7520
 Analytical Method: 8270D SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS
 Analytical Date/Time: 8/16/2013 5:40:00PM

Prep Batch: XXX29663
 Prep Method: SW3520C
 Prep Date/Time: 8/16/2013 9:15:00AM
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [XXX29663]
 Blank Spike Lab ID: 1168876
 Date Analyzed: 08/16/2013 17:55

Spike Duplicate ID: LCSD for HBN 1133805 [XXX29663]
 Spike Duplicate Lab ID: 1168877
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805004, 1133805005

Results by 8270D SIMS (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.5	0.426	85	0.5	0.446	89	(47-107)	4.60	(< 30)
2-Methylnaphthalene	0.5	0.401	80	0.5	0.413	83	(45-105)	3.00	(< 30)
Acenaphthene	0.5	0.404	81	0.5	0.422	84	(45-110)	4.40	(< 30)
Acenaphthylene	0.5	0.418	84	0.5	0.444	89	(50-105)	6.20	(< 30)
Anthracene	0.5	0.435	87	0.5	0.407	81	(55-110)	6.70	(< 30)
Benzo(a)Anthracene	0.5	0.453	91	0.5	0.453	91	(55-110)	0.14	(< 30)
Benzo[a]pyrene	0.5	0.464	93	0.5	0.468	94	(55-110)	0.68	(< 30)
Benzo[b]Fluoranthene	0.5	0.418	84	0.5	0.440	88	(45-120)	5.20	(< 30)
Benzo[g,h,i]perylene	0.5	0.424	85	0.5	0.432	87	(40-125)	1.80	(< 30)
Benzo[k]fluoranthene	0.5	0.413	83	0.5	0.456	91	(45-125)	9.80	(< 30)
Chrysene	0.5	0.423	85	0.5	0.460	92	(55-110)	8.40	(< 30)
Dibenzo[a,h]anthracene	0.5	0.437	88	0.5	0.426	85	(40-125)	2.50	(< 30)
Fluoranthene	0.5	0.447	89	0.5	0.473	95	(55-115)	5.70	(< 30)
Fluorene	0.5	0.388	78	0.5	0.425	85	(50-110)	9.30	(< 30)
Indeno[1,2,3-c,d] pyrene	0.5	0.438	88	0.5	0.449	90	(45-125)	2.60	(< 30)
Naphthalene	0.5	0.423	85	0.5	0.461	92	(40-100)	8.70	(< 30)
Phenanthrene	0.5	0.415	83	0.5	0.439	88	(50-115)	5.60	(< 30)
Pyrene	0.5	0.434	87	0.5	0.454	91	(50-130)	4.60	(< 30)

Surrogates

2-Fluorobiphenyl		90	0.5	95	95	(50-110)	5.60
Terphenyl-d14		107	0.5	108	108	(50-135)	0.15

Batch Information

Analytical Batch: XMS7520
 Analytical Method: 8270D SIMS (PAH)
 Instrument: HP 6890/5973 MS SVQA
 Analyst: RTS

Prep Batch: XXX29663
 Prep Method: SW3520C
 Prep Date/Time: 08/16/2013 09:15
 Spike Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 0.5 ug/L Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:23PM

Method Blank

Blank ID: MB for HBN 1475073 [XXX/29664]

Blank Lab ID: 1168878

QC for Samples:

1133805001, 1133805002, 1133805003

Matrix: Water (Surface, Eff., Ground)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.360U	0.600	0.180	mg/L
Surrogates				
5a Androstane	90.4	60-120		%

Batch Information

Analytical Batch: XFC11021

Analytical Method: AK102

Instrument: HP 7890A FID SV E R

Analyst: EAB

Analytical Date/Time: 8/19/2013 7:30:00AM

Prep Batch: XXX29664

Prep Method: SW3520C

Prep Date/Time: 8/16/2013 9:20:00AM

Prep Initial Wt./Vol.: 1000 mL

Prep Extract Vol: 1 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [XXX29664]
 Blank Spike Lab ID: 1168879
 Date Analyzed: 08/19/2013 07:50

Spike Duplicate ID: LCSD for HBN 1133805 [XXX29664]
 Spike Duplicate Lab ID: 1168880
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805001, 1133805002, 1133805003

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	5	4.96	99	5	5.00	100	(75-125)	0.80	(< 20)
Surrogates									
5a Androstane			90	0.1	86.7	87	(60-120)	3.10	

Batch Information

Analytical Batch: **XFC11021**
 Analytical Method: **AK102**
 Instrument: **HP 7890A FID SV ER**
 Analyst: **EAB**

Prep Batch: **XXX29664**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/16/2013 09:20**
 Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:24PM

Method Blank

Blank ID: MB for HBN 1475073 [XXX/29664]
 Blank Lab ID: 1168878

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1133805001, 1133805002, 1133805003

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.300U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62	90.6	60-120		%

Batch Information

Analytical Batch: XFC11021
 Analytical Method: AK103
 Instrument: HP 7890A FID SV E R
 Analyst: EAB
 Analytical Date/Time: 8/19/2013 7:30:00AM

Prep Batch: XXX29664
 Prep Method: SW3520C
 Prep Date/Time: 8/16/2013 9:20:00AM
 Prep Initial Wt./Vol.: 1000 mL
 Prep Extract Vol: 1 mL



Blank Spike Summary

Blank Spike ID: LCS for HBN 1133805 [XXX29664]
Blank Spike Lab ID: 1168879
Date Analyzed: 08/19/2013 07:50

Spike Duplicate ID: LCSD for HBN 1133805 [XXX29664]
Spike Duplicate Lab ID: 1168880
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1133805001, 1133805002, 1133805003

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	5	4.81	96	5	4.82	96	(60-120)	0.16	(< 20)
Surrogates									
n-Triacontane-d62			85	0.1	84	84	(60-120)	1.30	

Batch Information

Analytical Batch: **XFC11021**
Analytical Method: **AK103**
Instrument: **HP 7890A FID SV ER**
Analyst: **EAB**

Prep Batch: **XXX29664**
Prep Method: **SW3520C**
Prep Date/Time: **08/16/2013 09:20**
Spike Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 5 mg/L Extract Vol: 1 mL

Print Date: 08/19/2013 6:11:26PM

Pennick, Victoria (Anchorage)

From: Jayne Martin [jayne@bgesinc.com]
Sent: Thursday, August 15, 2013 12:05 PM
To: Pennick, Victoria (Anchorage)
Cc: 'Josh'; 'Katy Latimer'
Subject: WO#s 1133805 and 1133826

Hi Tori,

I was reviewing the COCs for WO#s 1133805 and 1133826 and have the following changes to make.

WO# 1133805

- Please add the analysis of the trip blank for GRO by AK101. →

1133805 ✓



WO# 1133826

- Section 4: This is not a DOD project.
- The data deliverable is a Level 2.
- The requested turnaround time for the samples is standard, 10 days.

Please contact me if you have any questions.

Thanks,

Jayne Martin
Senior Environmental Scientist
BGES, Inc.
(907) 644-2900 (office)
(907) 644-2901 (fax)
(907) 952-8381



SGS North America Inc.
CHAIN OF CUSTODY RECORD

1133805



CLIENT: **BGES**

CONTACT: **J. Barri's** PHONE NO: **644-2900**

PROJECT NAME: **WAFCO**

REPORTS TO: **J. Martin** E-MAIL: **josh@bgesinc.com**

INVOICE TO: **BGES** QUOTE #: **10136 open vsp 8/14/13** P.O. #:

Section 1

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 3

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	Section 3						REMARKS/LOC ID	
					#	Type	HC1	HC2	HC3	HC4		HC5
① A-E	MW13-0812	8-12-13	1630	W	5	G	X	X	X			
② A-E	MW16-0812	8-12-13	1430	W	5	G	X	X	X			
③ A-E	MW40-0812	8-12-13	1430	W	5	G	X	X	X			
④ A-E	PZ2-0812	8-12-13	1830	W	5	G	X	X	X			
⑤ A-E	PZ3-0812	8-12-13	1800	W	5	G	X	X	X			
⑥ A-B	Interception Trench	8-12-13	1230	W	2	G	X	X	X			
	Trip Blank 1			W	-	-	X	X	X			
	Trip Blank 2			W	-	-	X	X	X			
	Trip Blank			W	-	-	X	X	X			

Section 2

Section 4

Section 5

Temp Blank °C: **0.2/238**

Chain of Custody Seal: (Circle) **INTACT** **BROKEN** **ABSENT**

Page 1 of 1

[] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24



SAMPLE RECEIPT FORM

Review Criteria:	Condition:	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	1F 1B
Temperature blank compliant* (i.e., 0-6°C after CF)? * Note: Exemption permitted for chilled samples collected less than 8 hours ago. Cooler ID: <u>1</u> @ <u>0.2</u> w/ Therm.ID: <u>238</u> Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Note: If non-compliant, use form FS-0029 to document affected samples/analyses. If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." If temperature(s) <0°C, were all sample containers ice free?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	
Delivery method (specify all that apply): <input checked="" type="radio"/> Client USPS Alert Courier C&D Delivery AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	Note ABN/tracking # See Attached or <input checked="" type="radio"/> N/A Yes No <input checked="" type="radio"/> N/A	
→ For samples received with payment, note amount (\$) and cash / check / CC (circle one) or note: → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.		<input checked="" type="radio"/> N/A SRF Initiated by: <u>SLC</u> N/A
Were samples received within hold time? Note: Refer to form F-083 "Sample Guide" for hold time information. Do samples match COC* (i.e., sample IDs, dates/times collected)? * Note: Exemption permitted if times differ <1hr; in that case, use times on COC. Were analyses requested unambiguous?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	
Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	
Were proper containers (type/mass/volume/preservative*) used? * Note: Exemption permitted for waters to be analyzed for metals. Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="radio"/> Yes No N/A <input checked="" type="radio"/> Yes No N/A	
For special handling (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No <input checked="" type="radio"/> N/A	
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant? If pH was adjusted, were bottles flagged (i.e., stickers)?	<input checked="" type="radio"/> Yes No N/A Yes No <input checked="" type="radio"/> N/A	
For RUSH/SHORT Hold Time, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No <input checked="" type="radio"/> N/A	
For SITE-SPECIFIC QC, e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	Yes No <input checked="" type="radio"/> N/A	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No <input checked="" type="radio"/> N/A	SRF Completed by: <u>SLC</u> <u>8/14/13</u> PM = <u>N/A</u>
Was PEER REVIEW of sample numbering/labeling completed?	Yes No <input checked="" type="radio"/> N/A	Peer Reviewed by: <u>N/A</u>
Additional notes (if applicable):		

Note to Client: Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

APPENDIX D
LABORATORY DATA REVIEW CHECKLISTS

Laboratory Data Review Checklist

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC Hazard Number:

1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
 Yes No NA (Please explain.) Comments:

- b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
Yes No NA (Please explain.) Comments:

The samples were not transferred to a network laboratory.

2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?
 Yes No NA (Please explain.) Comments:

- b. Correct analyses requested?
 Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?
Yes No NA (Please explain.) Comments:

The temperature of the soil sample cooler was measured at the laboratory at the time of receipt to be 1.9 degrees C. This temperature is slightly below the prescribed optimal temperature range of 4 degrees +/- 2 degrees C. Because the temperature of the cooler was below the optimal temperature, it is our opinion that there is a reduced potential for biological degradation of the analytes and this quality control (QC) failure does not affect the acceptability of the data for their intended use.

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
 Yes No NA (Please explain.) Comments:

- c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
Yes No NA (Please explain.) Comments:

The samples contained the proper preservatives for the requested analyses and no unusual sample conditions were noted by the laboratory.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
 Yes No NA (Please explain.) Comments:

See 3a and 3c, above.

- e. Data quality or usability affected? (Please explain.) Comments:

N/A

4. Case Narrative

- a. Present and understandable?
 Yes No NA (Please explain.) Comments:

- b. Discrepancies, errors or QC failures identified by the lab?
Yes No NA (Please explain.) Comments:

The case narrative for this work order noted that there were no QC failures identified by SGS.

- c. Were all corrective actions documented?
Yes No NA (Please explain.) Comments:

See 4b, above.

- d. What is the effect on data quality/usability according to the case narrative? Comments:

N/A

5. Samples Results

- a. Correct analyses performed/reported as requested on COC?
 Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
 Yes No NA (Please explain.)

Comments:

c. All soils reported on a dry weight basis?
 Yes No NA (Please explain.)

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain.)

Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.) Comments:

Analysis of samples for metals/inorganic compounds were not part of the approved scope of work.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

See 4b, above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

N/A

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No NA (Please explain.) Comments:

- ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No NA (Please explain.) Comments:

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.) Comments:

See 4b, above.

- iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

See 4b, above.

- d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No NA (Please explain.) Comments:

All samples were kept in one cooler that was submitted to the laboratory.

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No NA (Please explain.) Comments:

All samples were kept in one cooler that was submitted to the laboratory.

- iii. All results less than PQL?

Yes No NA (Please explain.) Comments:

- iv. If above PQL, what samples are affected?

Comments:

N/A

- v. Data quality or usability affected? (Please explain.)

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.) Comments:

Yes

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No NA (Please explain.) Comments:

Relative standard deviation (RSD) was calculated for the set of triplicate samples instead of relative percent difference (RPD). The RSD was calculated only for the concentrations detected above the LOQs. DRO and RRO had acceptable RSDs of 26.3 percent and 28.5 percent, respectively, which are less than the ADEC acceptable limit of 30 percent. These results indicate the data set was normally distributed and the precision of the MI sampling data was acceptable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.) Comments:

Not applicable. A decontamination or equipment blank was not collected because it was not part of our approved scope of work.

i. All results less than PQL?

Yes No NA (Please explain.) Comments:

N/A

ii. If above PQL, what samples are affected?

N/A

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No NA (Please explain.)

Comments:

Laboratory Data Review Checklist

Completed by:

Title: Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC Hazard Number:

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
 Yes No NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
Yes No NA (Please explain.) Comments:

The samples were not transferred to a network laboratory.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?
 Yes No NA (Please explain.) Comments:

b. Correct analyses requested?
 Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?
Yes No NA (Please explain.) Comments:

The temperature of the water sample cooler was measured at the laboratory at the time of receipt to be 0.2 degrees Celsius (C). This temperature is below the prescribed optimal temperature range of 4 degrees +/- 2 degrees C. Because the temperature of the cooler is below the optimal temperature, it is our opinion that there is a reduced potential for biological degradation of the analytes and this quality control (QC) failure does not affect the acceptability of the data for their intended use.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

Yes No NA (Please explain.) Comments:

The samples contained the proper preservatives for the requested analyses and no unusual sample conditions were noted by the laboratory.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No NA (Please explain.) Comments:

See 3a and 3c, above.

e. Data quality or usability affected? (Please explain.)

Comments:

See 3a, above.

4. Case Narrative

a. Present and understandable?

Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes No NA (Please explain.) Comments:

According to SGS, the recoveries of several analytes within a continuing calibration verification (CCV) sample for the VOCs analyses did not meet the laboratory’s QC criteria and were considered to be biased high indicating a potential for these analytes in associated field samples to be biased high. However, because these analytes (according to SGS) were not reported at concentrations above the LOQs in the associated field samples, it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The percent recovery of chloromethane in the laboratory control sample (LCS), laboratory Sample Number 1168865, and the laboratory control sample duplicate (LCS D), laboratory Sample Number 1168866, exceeded the laboratory’s acceptance limit (144 percent and 139 percent, respectively), indicating a potential for the reported concentration of chloromethane to be biased high. Chloromethane was not detected above the limit of quantitation (LOQ) in the associated Field Samples PZ2, PZ3, and the trip blank, therefore, it is our opinion that this QC failure does not affect the interpretation of the data.

The LOQs for 1,2,3-trichloropropane and 1,2-dibromoethane for PZ2 and PZ3 exceeded their respective ADEC cleanup criteria. As such, it cannot be determined if the actual concentrations of these analytes within these water samples exceeded the applicable ADEC cleanup criteria for these analytes.

c. Were all corrective actions documented?

Yes No NA (Please explain.)

Comments:

See 4b, above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See 4b, above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

Yes No NA (Please explain.)

Comments:

b. All applicable holding times met?

Yes No NA (Please explain.)

Comments:

c. All soils reported on a dry weight basis?

Yes No NA (Please explain.)

Comments:

No soil samples were submitted for analysis as part of this data package.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No NA (Please explain.)

Comments:

See 4b, above.

e. Data quality or usability affected?

Comments:

See 4b, above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.)

Comments:

ii. All method blank results less than PQL?

Yes No NA (Please explain.)

Comments:

iii. If above PQL, what samples are affected?

Comments:

N/A

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

There were not any data QC issues with the Method Blank samples.

v. Data quality or usability affected? (Please explain.)

Comments:

N/A

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No NA (Please explain.)

Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No NA (Please explain.)

Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.)

Comments:

See 4b, above.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes No NA (Please explain.)

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

See 4b, above.

vii. Data quality or usability affected? (Use comment box to explain.)

See 4b, above.

Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes No NA (Please explain.)

Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No NA (Please explain.)

Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No NA (Please explain.)

Comments:

All percent recoveries for the surrogates were within acceptable method or laboratory limits.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

See 6c iii, above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

Yes No NA (Please explain.) Comments:

All samples were kept in one cooler that was submitted to the laboratory.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC?
(If not, a comment explaining why must be entered below)

Yes No NA (Please explain.) Comments:

All samples were kept in one cooler that was submitted to the laboratory.

iii. All results less than PQL?

Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

Yes No NA (Please explain.)

Comments:

Yes

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2) / 2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

Yes No NA (Please explain.)

Comments:

Water Sample MW40 was a duplicate of Water Sample MW16. The relative percent differences (RPDs) between the reported concentrations of DRO, RRO, and benzene within MW16 and duplicate sample MW40 were calculated and ranged from 11 to 15 percent; less than the ADEC acceptable limit of 30 percent. This indicates excellent sampling precision was achieved for this water sample and its duplicate water sample. The RPDs for the remaining analytes could not be calculated, because they were not detected in one or both of these samples.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

N/A

f. Decontamination or Equipment Blank (If not used explain why).

Yes No NA (Please explain.)

Comments:

Not applicable. A decontamination or equipment blank was not collected because it was not part of our approved scope of work.

i. All results less than PQL?

Yes No NA (Please explain.)

Comments:

N/A

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

Yes No NA (Please explain.)

Comments: